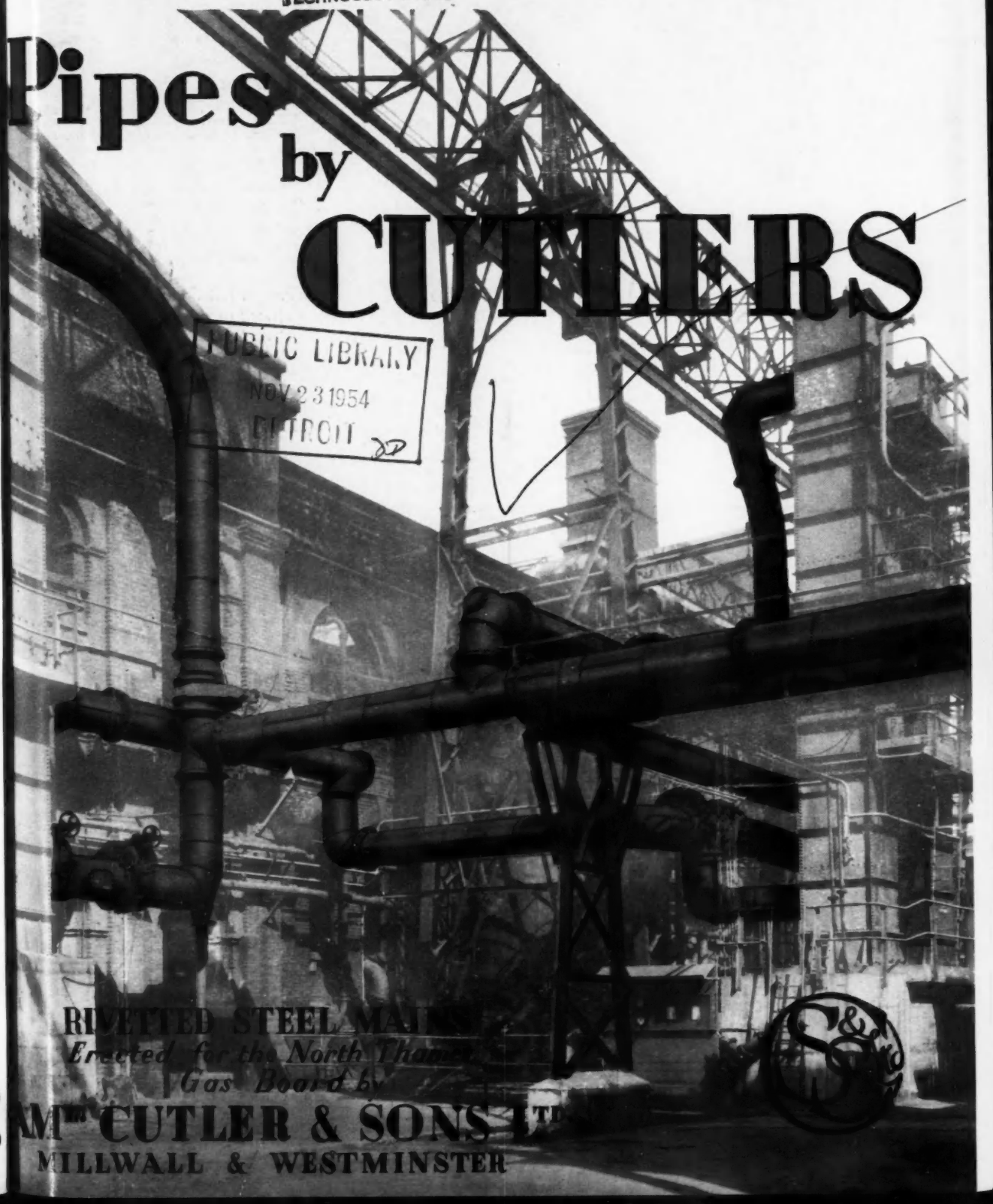
Gas Journal

VOL. 280. 106TH YEAR. LONDON, NOVEMBER 3, 1954. NO. 4770. PRICE 1/3

TECHNOLOGY DEPT.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RIVETTED STEEL MAINS
Erected for the North Thames Gas Board by
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non-setting paint

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Used because

One coat forms an impenetrable permanent barrier against corrosion.

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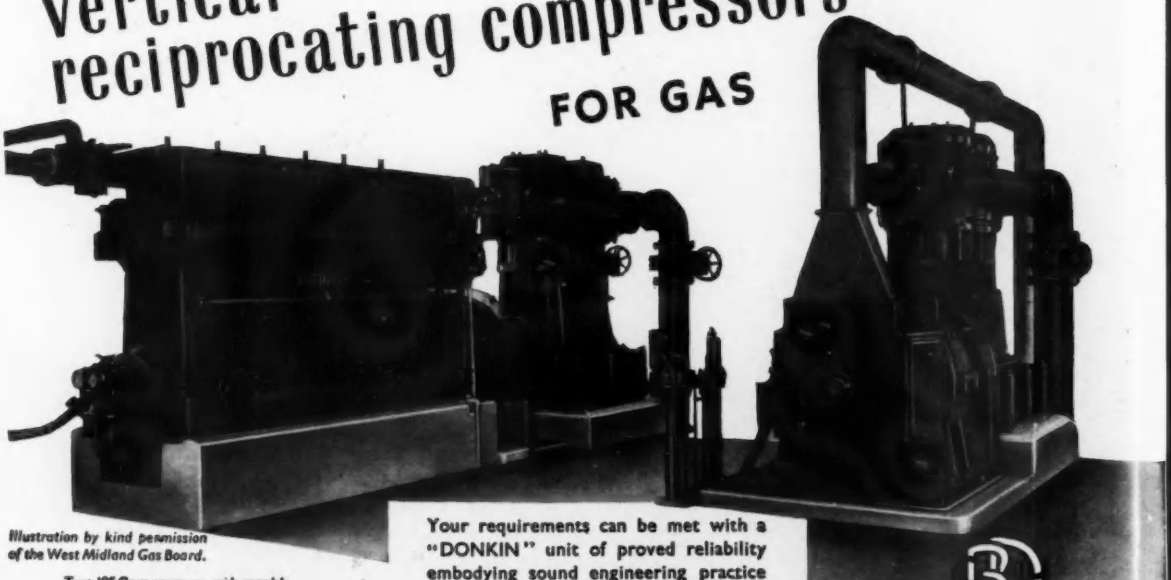

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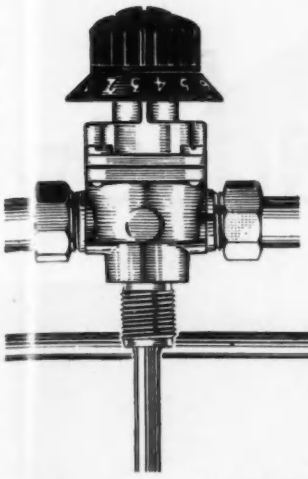
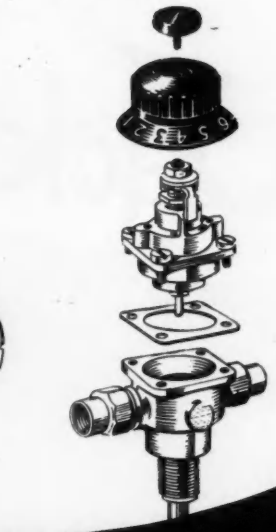


DOMESTIC DISMOUNTABLE THERMOSTATS



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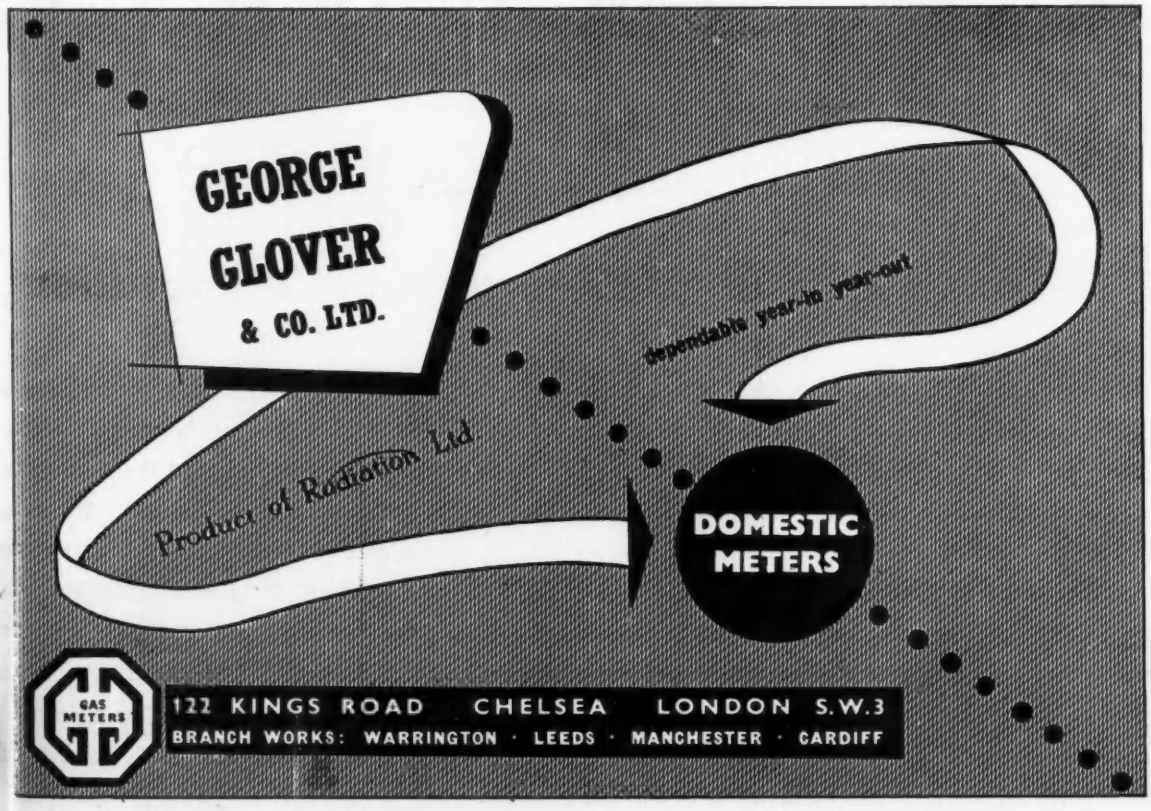


Jack of all trades—

The Bantam cutter is here seen mounted on the light aluminium track for straight cutting.

The cutting head has been set at an angle for bevel cutting. Bevels of up to 45° are easily produced.

The *BANTAM* lightweight Cutting Machine

for hand guided or fully automatic operation

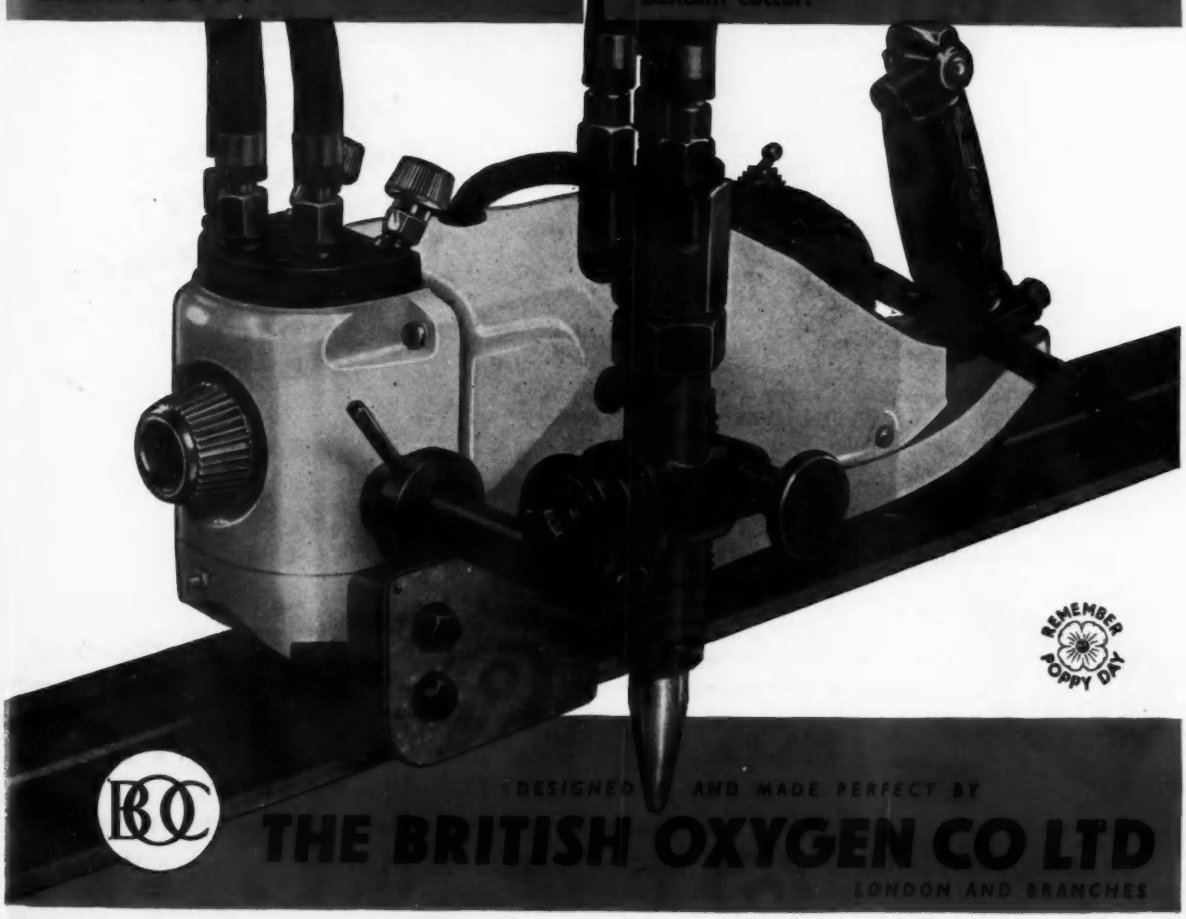
Here are four practical applications of a single lightweight unit so adaptable that it can produce bevels up to 45°, describe circles of any diameter you want between 3 inches and 45 inches, and cut mild steel of any thickness up to 2 inches. It can be used for either fully automatic or hand guided cutting. Equipped with the well-known Cutogen one-piece nozzle for use with oxy-acetylene, it produces clean machine-finish cuts on relatively intricate shapes. Two further refinements are a reversing-switch for track-mounted straight cuts, and a cross traverse arm with quick-acting locking lever for aligning the nozzle over the work with minimum delay. All steel parts are oxidised against rust, and the controls and hose attachments are chrome finished. By reason of its versatility, strength, powerful motor and sensitive speed control, the Bantam does the work of much heavier and more expensive machines. Accurate and efficient in all plate-cutting applications, it quickly pays its way in any fabrication shop.

Your nearest B.O.C office will gladly furnish full details.

and master of each!

This view shows the adjustable radius bar in use. The Bantam cuts circles of any diameter between 3" and 45".

Note the accuracy with which free-cutting shapes can be followed by the easy-to-control Bantam cutter.



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The photograph, reproduced by permission of the National Coal Board, shows recently completed sidings at Point of Ayr colliery.

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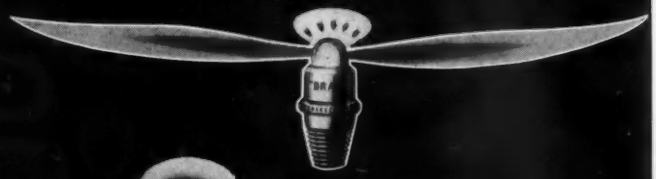

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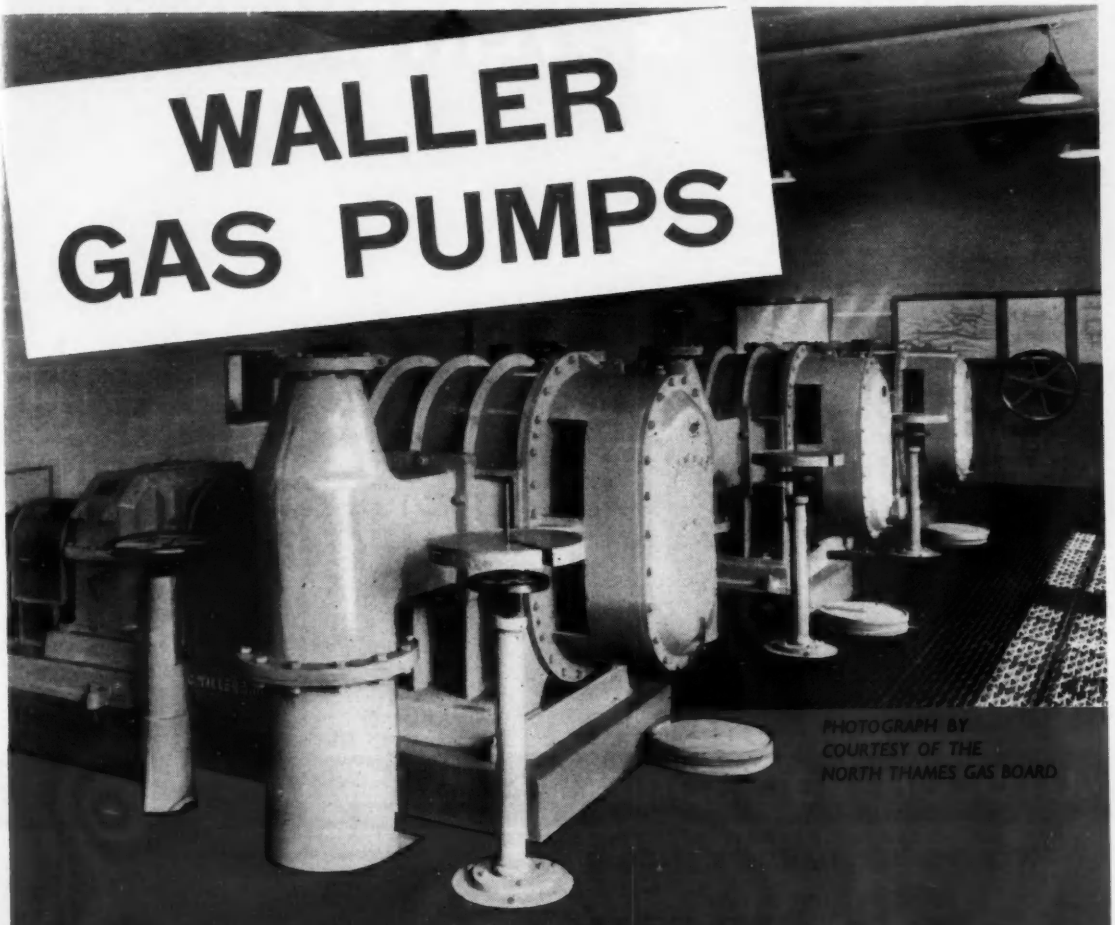

PHOTOGRAPH BY COURTESY OF THE NORTH THAMES GAS BOARD

What's in a name — Gas Pump, Booster or Blower they all do the same job and the name does not matter.

But the makers of such machines do matter and that is why Waller Gas Pumps are so often installed.

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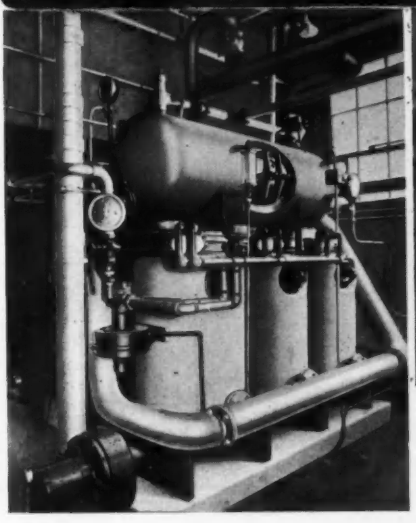

Photographs by Courtesy of Wembley Stadium, Ltd.

WEMBLEY STADIUM

The Boiler Plant consists of TWO B.3 "VESTA" GAS FIRED BOILERS fitted with horizontal overhead steam drums, having a total capacity of 1,350,000 B.T.U.'s per hour.

The plant supplies low pressure steam for heating two plunge baths direct and, through calorifiers, hot water for wash basins, showers and baths in the New Dressing Rooms of the Main Sports Arena.

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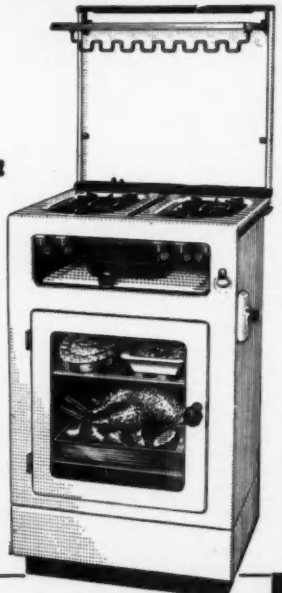
The glass door cooker with the *Extra* features!

Popular though it is, the non-misting glass door is but one reason why so many women decide on a VULCAN. They see the handy plinth drawer . . . self-locating grill pan . . . easy-to-clean finish inside as well as out. With its smooth-fitting, light-weight parts, the VULCAN is so easy to look after!



- *Fully-guaranteed Armourplate glass door.*
- *Retains full oven heat, can't steam over.*
- *Automatic regulator gives* double control.
- *Roomy plinth drawer.*
- *Self-locating grill pan.*
- *Fully-furnished oven.*
- *Good choice of finishes and oven capacities.*

Vulcan *DOUBLE-CONTROL*
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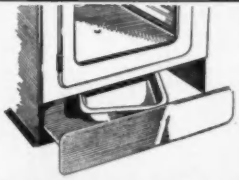
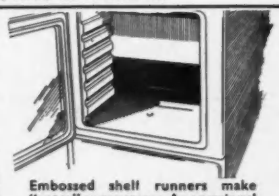
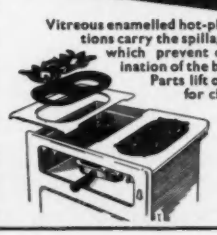


The Vulcan's plinth drawer is really useful for getting pans, shelves and utensils out of the way.



Embossed shelf runners make "gates" unnecessary. An occasional wipe with a damp cloth keeps this oven spotless.



Vitreous enamelled hot-plate sections carry the spillage pans, which prevent contamination of the burners. Parts lift off easily for cleaning.

***Point out these Vulcan advantages* YOUR SALES WILL BENEFIT!**

THE VITAL FLAME OF PROGRESS

Photograph by courtesy of the Gas Council.

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Born in Brunswick, he came to England about 1803 and became the "business impressario" of the infant gas industry.

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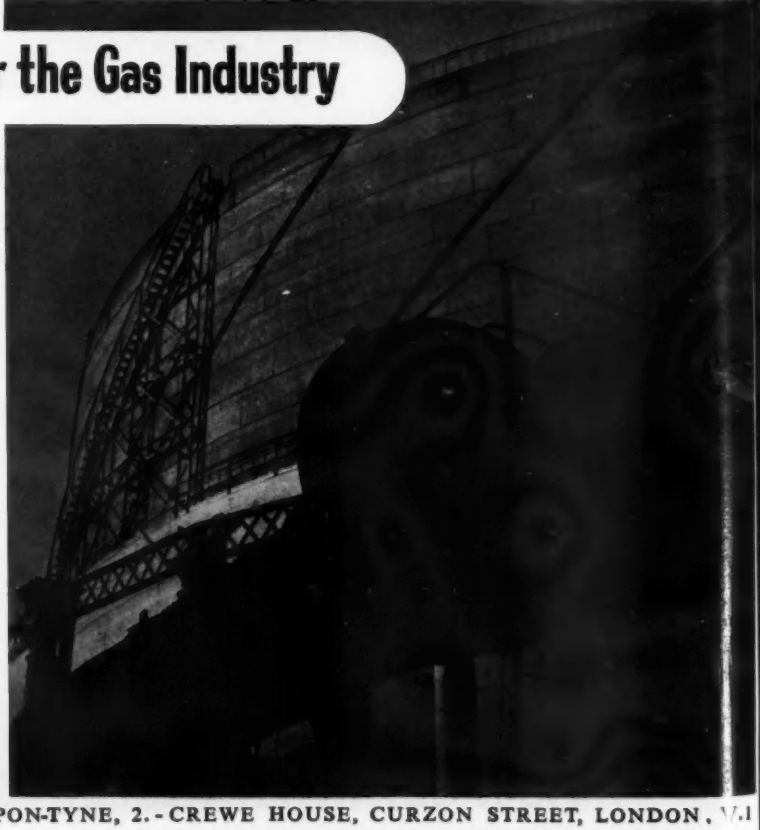
Aluminium Paints for the Gas Industry



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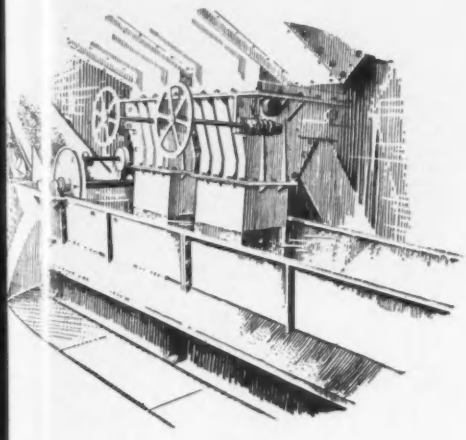

Mechanised, continuous, and dustless removal of ash residues from all types of boiler plants, refuse disposal plant, gas retorts, locomotive ash pits and the like, is provided for in the design of the John Thompson Submerged-Belt Ash Conveyor.

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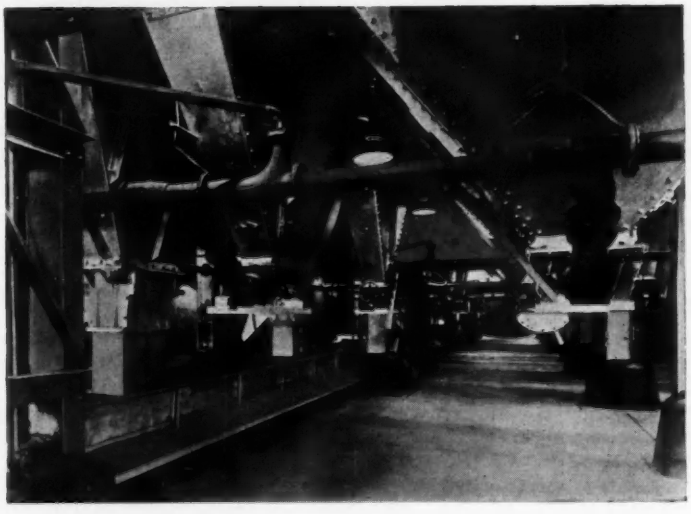

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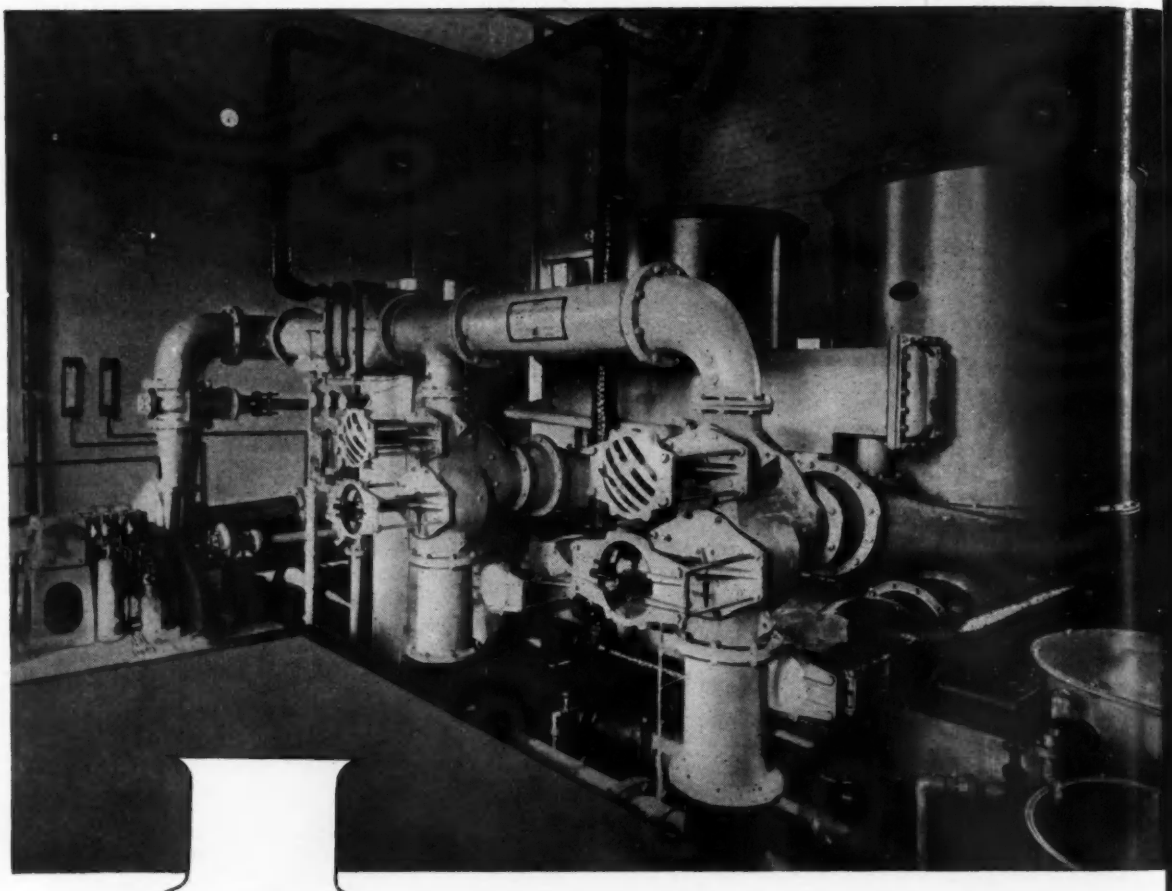

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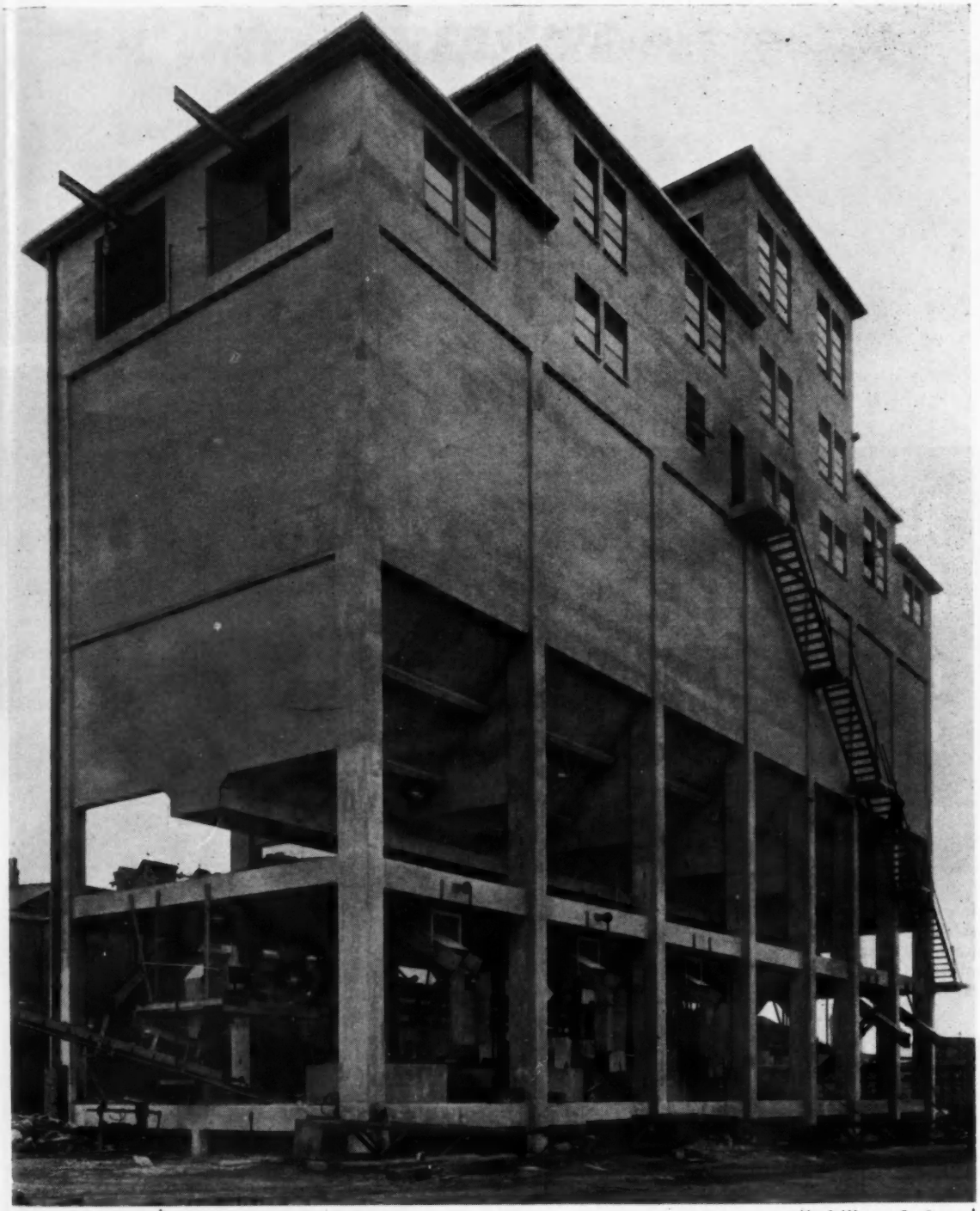

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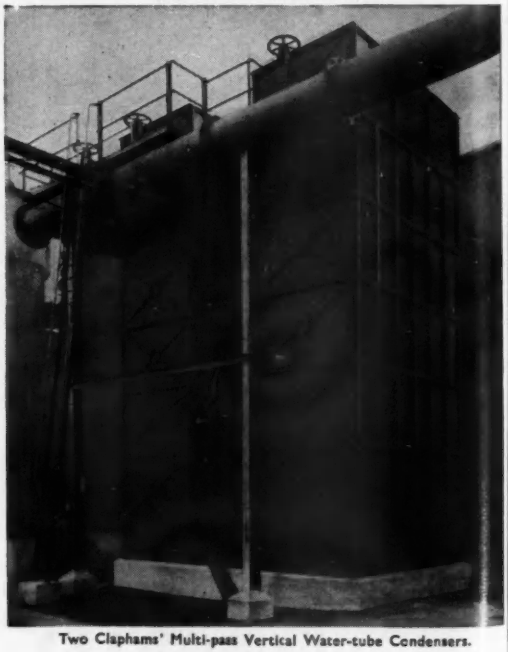
Two Clapham-Barwick Pumpless Static Ammonia Washers

Internal deck level view of the Purifier Installation. (Eight 45 Feet Square Boxes.)



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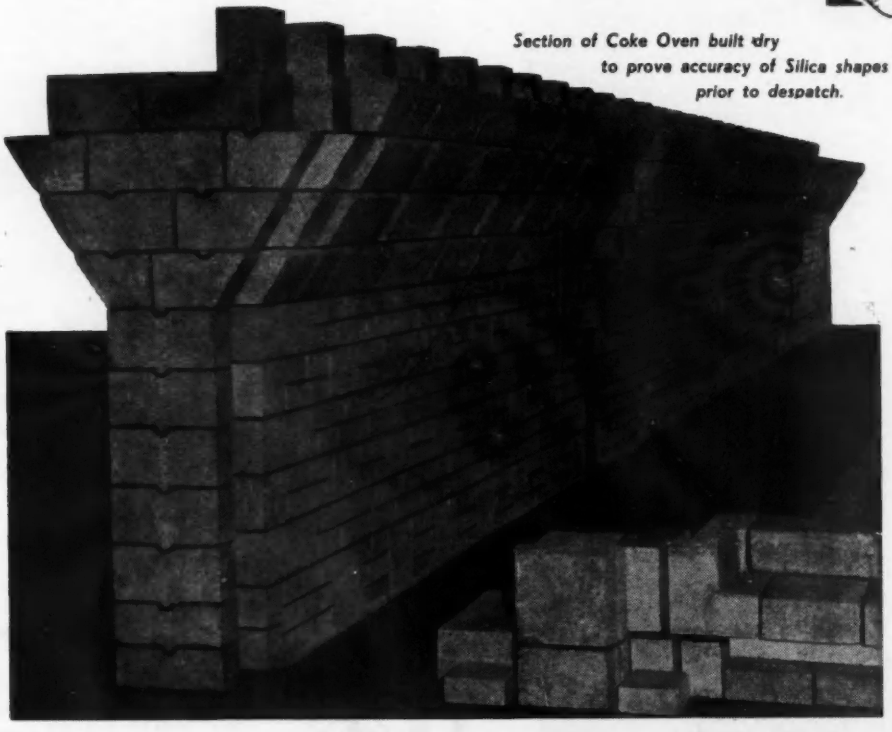

Section of Coke Oven built dry to prove accuracy of Silica shapes prior to despatch.

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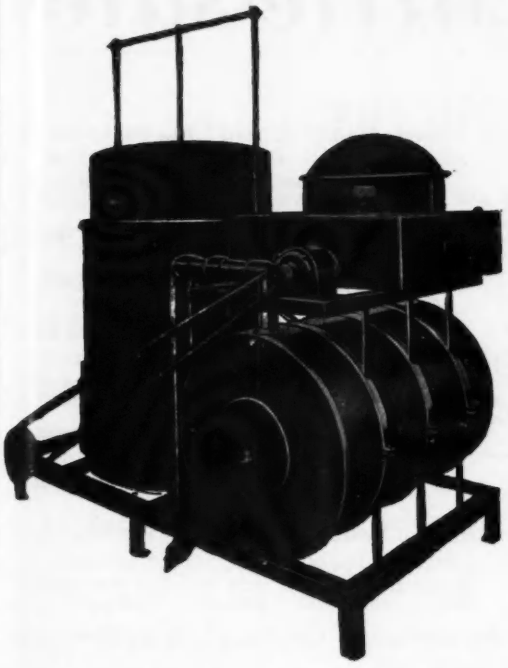

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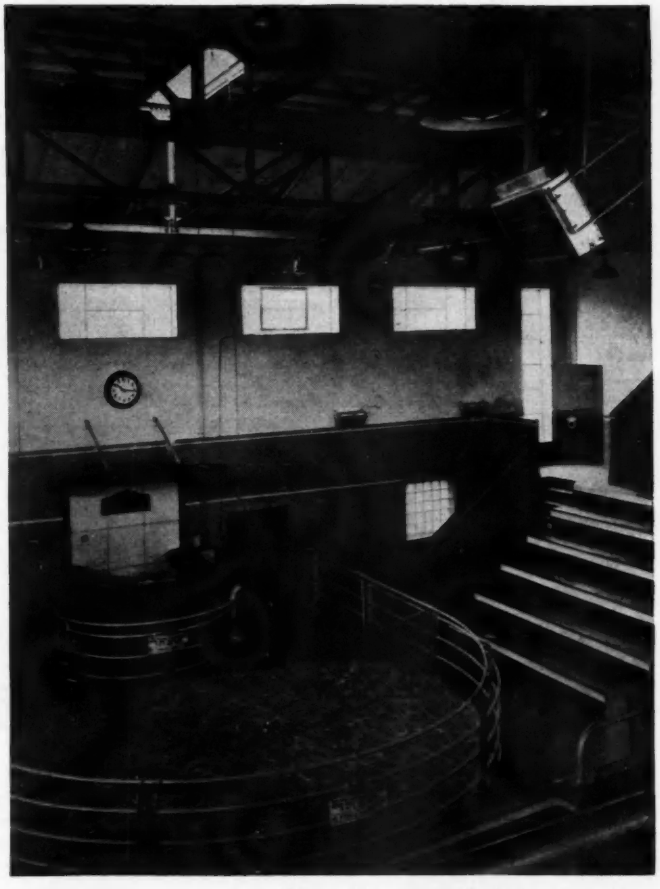

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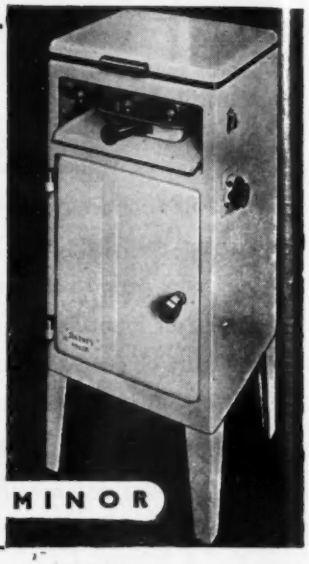

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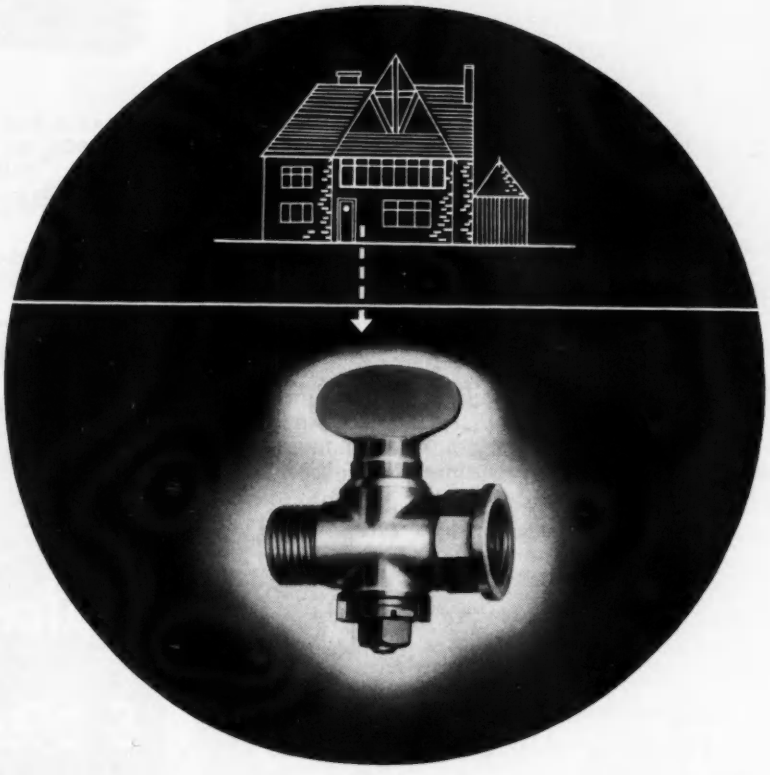

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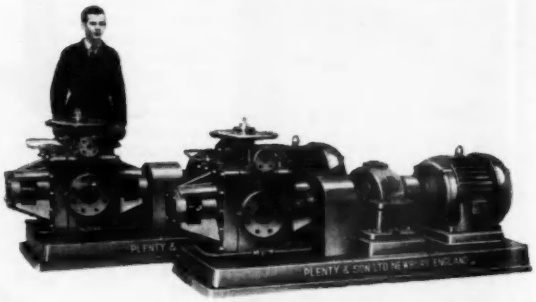

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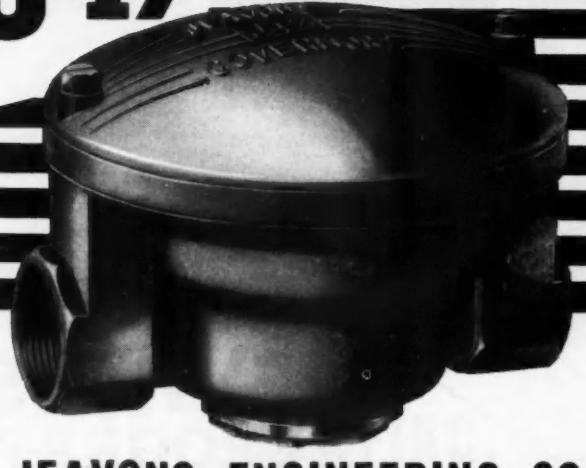
J47



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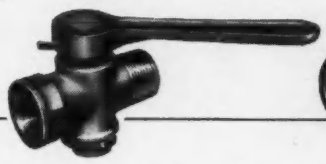
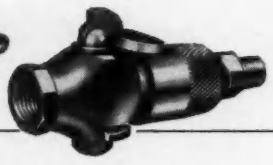


M & F Main Cock with Iron Key.



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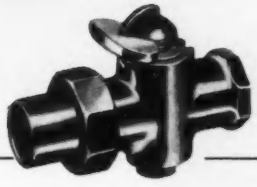
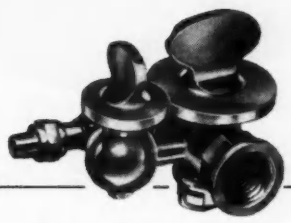


Union Cock with drop lever.

Gas Fire Cock with loose key, flanged for floor fixing.



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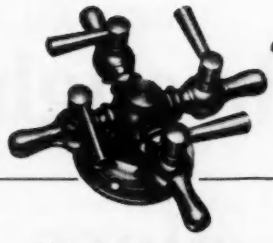
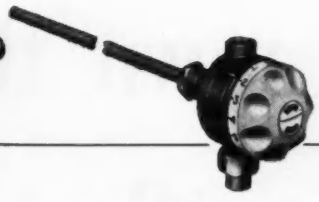


4 Way Laboratory Bench Cock, for Laboratory use.



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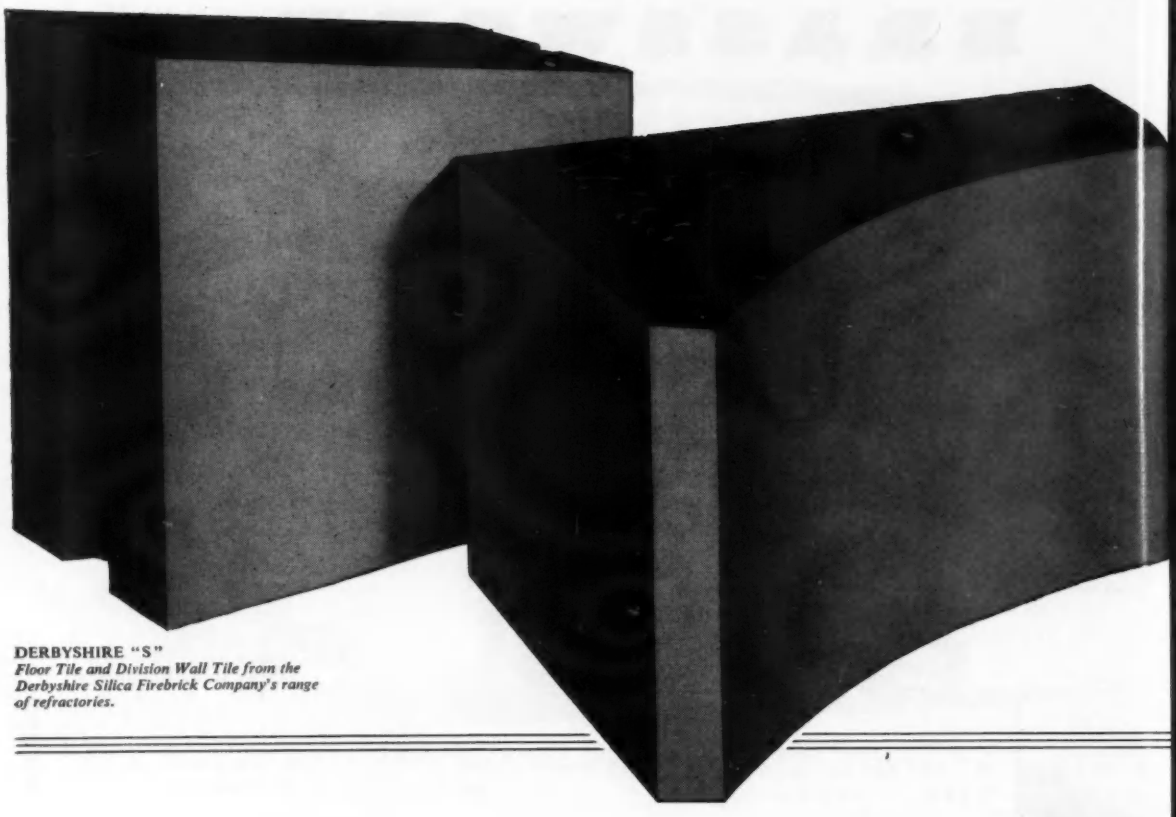

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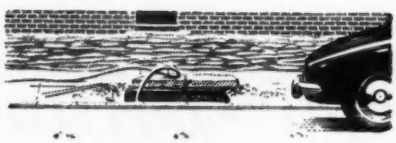

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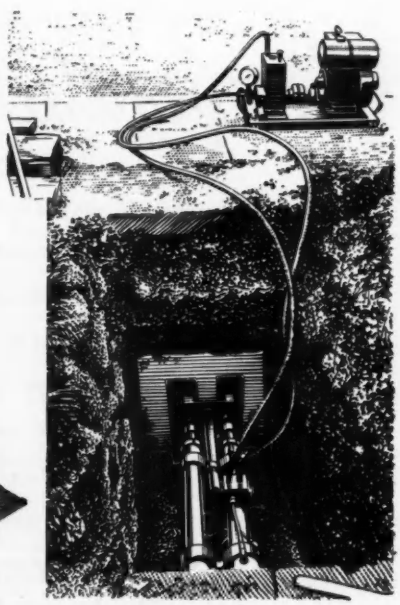

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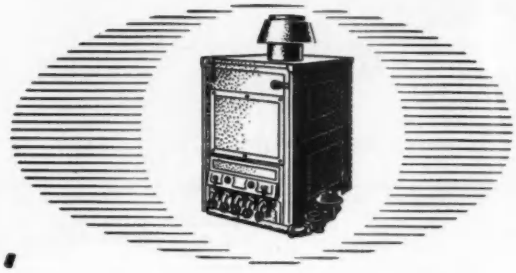

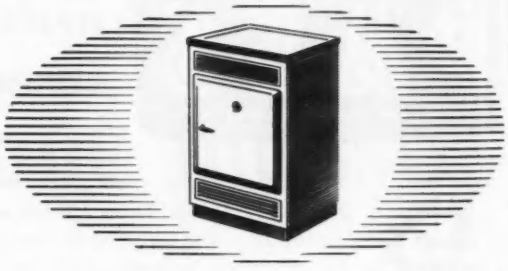

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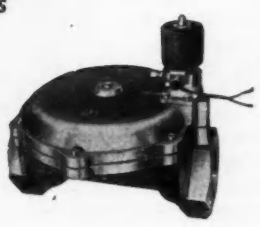

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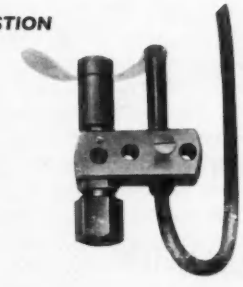

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Gas Journal

VOL. 280 NO. 4770 November 3, 1954
106th YEAR

Managing Director: Clifford A. King

Editor: Trevor G. Williams, A.M.I.Mech.E., Assoc.Inst.Gas E., M.Inst.F.
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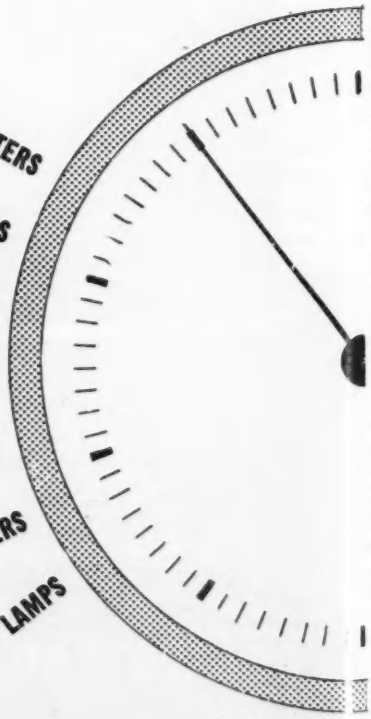

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Gas Journal

VOLUME 280 . No. 4770. NOVEMBER 3, 1954. 106th YEAR

An Exciting Possibility

FEW industries have had to face such violent upheavals in its ways of thinking as has the gas industry in the last five or six years. Not only has it had to adjust itself to its nationalised state and all that that implies in terms of human and technical problems but, simultaneously, it has had to contend with continually increasing difficulty in obtaining adequate supplies of the chief raw material for its manufacturing processes. The industry, in its new guise, has had to take decisions and alter preconceived ideas and practices, at a rate which would have left our forebears quite breathless. But it has shown that it can stand the pace and that, although well over 100 years old, it is not suffering from 'hardening of the arteries.' For the past 50 years or more various Jeremiahs have predicted the decline and early downfall of the gas industry, particularly in view of fierce competition from the younger and—some would say—more aggressive electrical industry. In the event their prognostications have been proved entirely false and the gas industry, far from being dead, has shown its intention of not lying down in the face of adversity. We would venture to say that these are great days for new entrants to the industry, especially the technical men, for the fresh wind of stern necessity is sweeping away many of the old approaches and outlooks and a host of exciting new possibilities are presenting themselves.

Probably the foremost among the fresh sources to be suggested for augmenting our supplies of gas is natural gas, a fuel which, not so many years ago, was hardly considered at all for domestic and industrial use. Now the country is being combed for reserves of this particular fuel and should such reserves be found in adequate amounts a difficult gap in coal supplies could be bridged. While the search continues in this country longing eyes have been cast at the vast quantities of natural gas that are burnt to waste at the oilfields in the Middle East. It may well be asked whether it is not possible for us to tap these enormous resources, which apparently cannot be used where they occur. Suggestions have been made that the natural gas might be piped across Europe to this country where its selling price would probably be little more than the cost of its transportation. The main snag with this idea is, of course, a political one, since any nation through whose territory the pipeline passed would be in a position to cut off supplies of gas to all those who were more distant from the oilfields. As Britain would be at the 'tail-end' of any pipeline laid across Europe from the Middle East our prospects of having an uninterrupted supply of gas in a time of international disharmony, would be very doubtful, to say the least! Certainly we, in this country, could not afford to recast our national fuel economy on so unsafe a foundation.

At the beginning of last week a new and even more revolutionary idea was expounded. In the House of Commons on Monday, October 25, during the debate on the annual report of the National Coal Board, the Minister of Fuel and Power made some very significant remarks about the possibility of transporting natural gas in liquefied form from the Middle East to Britain. The Minister mentioned a technique which has been developed recently by an American firm for converting natural gas into a liquid form and then transporting it in refrigerated barges from the Gulf of Mexico, where the supplies are found, up the River Mississippi to Chicago. The technique involves the cooling of the gas to a very low temperature (about -260°F.), at which it liquefies, then occupying only 1/600th of its original volume. In this state it can be safely contained at atmospheric pressure, and could, according to the promoters of the scheme, be conveyed quite long distances in refrigerated vessels, even sea-going tankers. The Minister of Fuel and Power said in his speech last Monday week that, 'The gas industry is considering this project and has sent a technical mission to the United States to study it. The scheme is believed to be technically feasible and the preliminary estimates show that the cost per therm might be considerably lower than that of the present carbonisation process.'

Before we throw our hats in the air, however, there are a number of points that should be considered. In the first place there is the cost of converting the gas into its liquid form; this would involve considerable outlay on plant for the purpose at, or near, the oilfields, where the gas would have to be liquefied in bulk. The treatment of our capital investments in the Middle East during the last few years has been a very sore point with us in Britain, and it should not cause surprise if the gas industry in this country thinks very carefully before sinking a lot of money in plant and equipment many hundreds of miles away from these shores. A second point to bear in mind is that suitable

refrigerated vessels would have to be provided and this would take quite a long time apart from requiring a considerable amount of capital. Finally there is always the matter of a suitable contract for the supply of gas from the wells to the proposed liquefaction plants. At the present time the oil companies may be only too glad to sell the natural gas very cheaply—but that is chiefly because nobody seems to want it. If it becomes clear to them that there is a steady demand for it then the tendency will be for the price to rise. On the other hand, there is reason to believe that as natural gas does not have to be manufactured from an expensive raw material, it should be possible to agree a price that would give a satisfactory margin to both the oil companies and the Gas Council; also the fact that natural gas contains very little sulphur means that it would not require such intensive purification as is needed with carbonisation gas.

Obviously, these are early days to discuss the details of any technique for bringing natural gas to Britain from so distant a part and by such means. No doubt the coming months will show whether the idea is feasible or not. One thing is certain, however, and that is that the Gas Council will investigate the possibilities of the scheme most thoroughly. Mr. L. W. Joynson Hicks, Parliamentary Secretary to the Ministry of Fuel and Power, replying during the debate to which we have already referred, said that 'the Gas Council is fully seized of the importance of it (the scheme)' . . . and that he had 'not the slightest doubt as to the potential value of this idea if the gas can be obtained at a figure which enables the Council to sell it here at an economic price.' For the present then we propose to await the outcome of the Gas Council's investigations before commenting further on what is probably one of the most revolutionary ideas ever to interest the gas industry of this country.

Road Tar Progress

ROAD tar has gone a long way since the British Road Tar Association was founded some 28 years ago, but there was evidence at last week's annual meeting of the Association that much further progress is to be hoped for in the next few years. Last year the International Road Tar Conference assembled in London for its first post-war meeting, and already the member associations are looking forward to the next meeting which we gathered from Mr. J. Davidson Pratt at the annual dinner of the B.R.T.A., will be held in France. A valuable outcome of the international meeting in 1953 is an agreement between the member countries for the regular exchange of technical information and literature. Under its arrangement with the B.R.T.A. the Road Research Laboratory has during the past 12 months been engaged on research on surface dressing, medium-textured carpets, and dense tar surfacing, and is now co-operating with the engineers of certain local authorities in the examination of the practical implications of using a number of wetting agents by dissolving them in the tar binder in different concentrations. Tars washed with caustic soda solution under pressure are being tested in the Laboratory to see whether an improved resistance to oxidation has been achieved by this process. The Laboratory is investigating the use of slag fines in dense tar surfacing on roads carrying heavy and medium traffic in the East Midlands and East Anglia, where slag can be supplied as a relatively cheap aggregate.

Also under the heading of research the annual report of the B.R.T.A. records progress in dense tar surfacing, testing of tar sprayers, the drafting of revisions of standard specifications for tars for road purposes, and studies on wetting agents. In order to provide a closer link between the more scientific aspects of road tar and its practical application by the user, the Association has appointed a Scientific Officer, Mr. E. J. Dickinson, M.A., B.Sc., F.R.I.C., who served with the Road Research Laboratory for some time after qualifying. He subsequently spent three years with the Bituminous Binder Research Unit of the South African Council for Scientific and Industrial Research. His appointment will relieve members of the Technical Committee of the B.R.T.A. of much of the detailed work they have frequently undertaken in the past despite pressure of duties with their own organisations.

The four technical representatives of the Association have had another active season, visiting road tar suppliers and other customers in all districts, seeking to bring supplier and user into closer contact and offering advice and assistance wherever desired. Since the war the Association has provided a certain amount of technical service to members in Eire and Northern Ireland and during the past year the members in that country felt that such activities should be increased. Visits were accordingly paid by two of the technical representatives from England and a general report was prepared on the position in Ireland. Members in Ireland persuaded other road tar suppliers to join the Association which now has 100% representation from that country. With the additional funds and following reports from the technical representatives, the Council has decided to appoint a special representative for Ireland.

The Association is greatly concerned with the urgency of the need for more and better roads in Great Britain, not merely because its members are commercially interested in supplying what they claim to be the best binding material but because of the importance of not allowing our road transport systems to lag too far behind the high standards of the roads on the Continent and in other parts of the world. Its relations with the road tar users—represented in the main by county and municipal engineers—are cordial, as is evidenced at every annual dinner. Those on both sides of the counter are at one in their advocacy of a bolder and more extensive road-making programme.

GASES FROM SHALE OILS

Recent development of processes for the commercial extraction of oil from America's great deposits of oil shale (containing an estimated recoverable 500 billion barrels) has led the Institute of Gas Technology, Chicago, to investigate the use of shale oil in the production of high-B.Th.U. oil gases. Results of the study, which was sponsored by the American Gas Association under its PAR (Promotion-Advertising-Research) Plan, are published in an I.G.T. interim report, 'Production of High-B.Th.U. Oil Gases from Crude Shale Oils,' by E. B. Shultz, Jr., J. J. Guyer, and H. R. Linden. The oil gas yields from shale oil were found to be approximately the same as those obtained from petroleum oils of equivalent carbon-hydrogen ratio, and, when scrubbed and blended with inerts to the desired heating value and specific gravity, had equal or greater substitutability for high-methane natural gas than petroleum oil gases of the same heating value.

Personal Notes

MR. HARRY WARD, retiring at the age of 71 after 52 years service with Sidney Flavell & Co., Ltd., of Leamington, received a farewell cheque of appreciation from the Chairman of the Company, Mr. Duncan Wright, on the shop floor. Also at the presentation were Mr. F. M. Rogers, Sales Director and Mr. J. Allen, Works Director.

MR. D. M. HUGHES has relinquished his seat on the Board and his office as Managing Director of British Benzol and Coal Distillation, Ltd., on reaching retiring age. MR. G. H. JOHNSON, Chairman, now combines the office of Managing Director, and MR. IDWAL WILLIAMS, who has been with the Company since its formation and Secretary for the past 10 years, has been appointed a Director.

MR. THOMAS SMITH has been appointed Divisional Sales and Service Superintendent of the Edinburgh Division, Scottish Gas Board, with MR. KENNETH F. CAIRNS as Divisional Distribution Engineer, MR. T. PRINGLE as Gasfitting Superintendent for the Edinburgh District, and MR. I. ANDERSON as Assistant Mains Superintendent, Edinburgh District. These changes follow the departure of MR. J. R. DENOON, formerly Divisional Distribution Engineer, for Aberdeen, where he takes up the appointment of Assistant Divisional Controller.

MR. W. D. WILSON, Chairman and Managing Director of George Wilson Gas Meters, Ltd., has, as a consequence of the acquisition by that Company of nearly the whole of the share capital of Radiant Heating, Ltd., been appointed Chairman of Radiant Heating, Ltd., and MR. J. F. RONCA, a Director of the parent Company, has been appointed to the Board of Radiant Heating, Ltd. MR. A. DOCKING retains his position as Managing Director of Radiant Heating and it is intended that the day to day administration of that Company will continue under his direction as it has done for many years past.

MR. R. A. SMITH, assistant to the Commercial Manager of the North Thames Gas Board, has been appointed Sales Manager of General Gas Appliances, Ltd. Other changes announced by the Company include the transfer of MR. E. L. MATHERS, who previously represented General Gas Appliances in the North Western area, to the South of England, covering the North Thames and South Eastern areas. MR. J. F. ROBERTS, who was at the headquarters of the North Western Gas Board, has been appointed in his place as North Western representative. MR. D. SMITH, who was manager of the Leeds Showroom of the North Eastern Gas Board, has also been appointed as a representative.

MR. W. J. EBBEN, Education and Training Officer of the Fraser & Chalmers Engineering Works of the General Electric Co., Ltd., has retired after 37 years with the Company.

MR. P. RALPH has been appointed Manager of the Scottish branch sales office of the British Aluminium Co., Ltd., in succession to MR. M. J. J. RICHARDS who has been appointed Assistant Manager of London branch sales office.

MR. W. J. ROWE and MR. H. R. J. WEST, M.B.E., have been appointed Directors of Abbott, Birks & Co., Ltd. Mr. Rowe has for many years been General Manager and Mr. West, Secretary of the Company.

MR. THEO ROSS, Manager of Fraserburgh gasworks for the past six years, has been promoted to the post of Manager at Arbroath gasworks. A native of Leven, Fife, he joined the staff of Fraserburgh Town Council in 1948 as Gas Engineer and Manager. He continued in that position after nationalisation. He was formerly assistant engineer and manager at Buckhaven and Leven.

Obituary

MR. ARTHUR STANLEY HOLDEN, Deputy Secretary of the South Eastern Gas Board, died on October 26 after a short illness at the age of 64. During his service of nearly 50 years Mr. Holden gained a wide and intimate knowledge of the administration of the gas industry to which he devoted the whole of his working life. His close attention to detail and his accurate and analytical mind were outstanding. Mr. Holden joined the South Metropolitan Gas Company in December, 1905. In January, 1915, he became personal clerk to Dr. Charles Carpenter, President of the Company, in which capacity he served until October, 1925. For the next four years he was Records Clerk. Then in November, 1929, he was appointed Assistant Secretary. On nationalisation he was appointed Deputy Controller of the Metropolitan Division of the South Eastern Gas Board, and, a year later, Deputy Secretary to the Board. During his long service with the South Metropolitan Gas Company he played a prominent part in the administration of its co-partnership organisation and of a number of bodies connected with the well-being of the employees, to which he gave unstintingly of his knowledge and advice. Mr. Holden was an Associate Member of the Institution of Gas Engineers and a Fellow of the Chartered Institute of Secretaries, the Royal Economic Society, and the Royal Society of Arts.

Correspondence

CHEQUE ENDORSEMENT

DEAR SIR,—The Chartered Institute of Secretaries is in favour of the abolition of the endorsement of cheques paid by the payee into his bank. The special committee of the Institute which made this recommendation is investigating ways and means of bringing the change about in the most effective and expeditious manner. Such endorsement could be dispensed with (a) by devising a new document which is not, as is a cheque, a bill of exchange, (*b*) by modification of banking practice; or (*c*) by amendment of the Bills of Exchange Act, 1882. Change which avoids the hazards of legislation has the advantage of flexibility and facilitates experiment.

It would be imperative to ensure the retention of the practice under which the payee gives a receipt on the cheque for the payment, having regard to, *inter alia*, the savings thus afforded in labour, stationery, and postage. Since 97 of every 100 cheques are paid direct into the payee's bank the abolition of endorsement where there is no negotiation would prove of benefit to all members of the community and particularly to organisations receiving a large number of remittances daily. It would eliminate unnecessary administrative costs and the employment of staff on work which yields little, if anything, useful or by way of safeguard.

The committee to which I have referred and of which I am chairman would be pleased to hear from those of your readers who are in a position to add to the Institute's information concerning the problem, or to contribute towards the formulation of the most appropriate solution. Publication, even in abbreviated form, of the comprehensive report on the subject of the Committee of London Clearing Bankers would be invaluable.

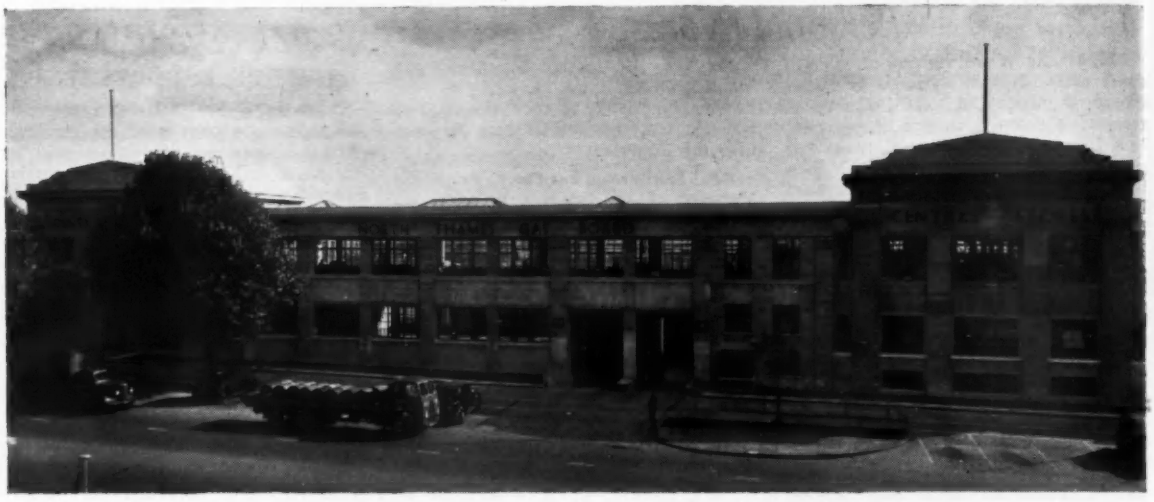
Yours faithfully,
J. R. W. ALEXANDER.

Chartered Institute of Secretaries,
14, New Bridge Street, E.C.4.

October 18, 1954.

Northern Ireland Prices

Holywood Urban Council has decided to ask the Belfast Corporation to consider a revision in the cost of gas supplied to the town. The decision was made after Mr. W. E. Russell had pointed out that the difference in price between gas supplied to Holywood and to householders in Belfast amounted to 1s. 4¼d. per 1,000 cu.ft. The cost inside the city boundary was 7s. 7¼d., and in places like Finaghy, Whiteabbey, and Dunmurry it was 8s. 2¼d. In Holywood, however—only five miles from the city—the charge was 8s. 11½d. Mr. Russell pointed out that Bangor with a population of 23,000 charged 5s. 11d. per 1,000 cu.ft. inside the boundary and 6s. 3d. to other consumers.



North Thames' New Central Stores

WHEN the gas industry was nationalised the North Thames Gas Board acquired the centralised purchasing, stores and stock control organisation of the Gas Light and Coke Company. Prior to the war, the Gas Light and Coke Company operated a central stores situated in Nine Elms, Battersea, and the building also housed the staff associated with buying, stock control and other related functions.

During the war central stocks were dispersed and a large part of the central stores building was destroyed by enemy action. When the opportunity came to plan the post-war arrangements the staff found themselves in temporary offices in a private house with the so-called central stores scattered over fourteen different locations. Some of these stores were operational and some were merely housing overflow stocks. Some were awkwardly located, in many cases the accommodation was inconvenient and unsuitable and all were congested.

A detailed study of the possible types of organisation conclusively showed that the policy of central purchasing and centralised storage of certain common user items gave very considerable saving over alternative arrangements. As a result of this the Gas Light and Coke Company authorised the purchase of a factory on the Great West Road for conversion to offices and warehouse and this decision was subsequently confirmed by the North Thames Gas Board. The site is convenient for the use of several trunk roads giving access to the whole of the Board's area. Railway sidings at the rear of the building could be made available if required.

The extensive structural alterations and additions to the original factory were carried out by W. J. Cearns, Ltd., under the direction of the architect, Mr. John Batty, F.R.I.B.A. Much of the planning of the layout of the warehouse and of the storage and handling equipment was carried out by the Controller of Stores' staff, building and property maintenance department and Chief Draughtsman's office.

Fig. 1. General office—Stores Superintendent's department.

Adjacent to the entrance hall are the enquiries office, waiting and interviewing rooms and provision for a sample room and laboratory (not yet completed). On the first floor are situated the Controller of Stores' office, committee room, the Stores Buyer's department, the Stores Superintendent's department and the staff and workmen's dining rooms.

Administration

The Controller of Stores is responsible to the Board for all matters in general relating to the acquisition, storage, stock control and distribution of supplies of goods and services described later. The responsibility for acquisition is delegated to the Stores Buyer, and for storage, stock control and distribution to the Stores Superintendent.

In addition to the vital day-to-day co-operation of the staff with other departments, general liaison on policy is main-

Fig. 2. General office—Store Buyer's department.

tained by means of monthly meetings of the stores committee, of which the Controller of Stores is chairman and on which sit the Stores Buyer, Stores Superintendent, Officer in Charge of testing stores, and members of user departments. Appropriate officers also attend, as found desirable, other departmental meetings such as the engineers' committee and the divisional managers' committee when supply matters are discussed.

The Controller of Stores is chairman of the Board's standardisation committee which meets as required to review standards.

General

Although the supplies function is centralised it is worthy of note that only a portion of the total goods acquired is delivered to and distributed from Central Stores.

Generally speaking, central stocks are maintained:—

(*a*) in the case of all items for sale to consumers or for installation in their premises. The reasons for this arrangement are firstly that they are all required to be inspected or tested for safety reasons, and secondly that considerable economies result from bulk purchasing for delivery to one depôt.

(*b*) in the case of common user items where it is found that savings can be made by bulk purchasing.

It is, of course, essential that any savings shall be greater than the cost of handling from Central Stores.

It will be obvious that it would, for example, be quite uneconomic to purchase motor spares for delivery to Central Stores and then transfer them all to the Motor Repair Shop Stores, and many other items are delivered direct to using departments for similar reasons. Certain items are dealt with in other ways, e.g., structural steel and timber are purchased in bulk and stored at a central site, but not at the Great West Road.

In the case of gas mains and fittings the items are delivered direct to site where there are large main-laying projects, or are centrally stocked on each Division for repair and maintenance work. The total value of stocks held by the Board is about £3½ million, of which some £450,000 is held in Central Stores.

Stores Buyer's Department

The Stores Buyer's department is concerned with the purchase of the Board's supplies which can be classified broadly into:—

Requirements for production processes and maintenance of twenty-one gas works and two by-products works.

Gas mains, pipes, valves, etc., for distribution of gas from the works to the consumer,

Requirements of meters, appliances and their spare parts, fittings and materials, tools, etc., for installation work in consumers' premises or sales,

Requirements of ancillary departments such as—

Transport and motor repairs,

Gas appliances and meter repairs,

Building and property maintenance,

Works and research laboratories,

Medical and first aid,

Catering,

Office equipment and stationery,

Uniform clothing.

Coal is excluded and this commodity, which has special transport problems attached to it, is dealt with by the Coal Manager.

The department is also responsible for the letting of all contracts for the supply and erection of plant, building work and the like.

The annual value of the orders and contracts placed is at present about £13 million, of which major constructional contracts account for about £3½ million of the amount mentioned.

The department is divided into four principal sections:—

(A) The buying groups.

(B) The contracts section.

Fig. 3. A view inside the printing section.

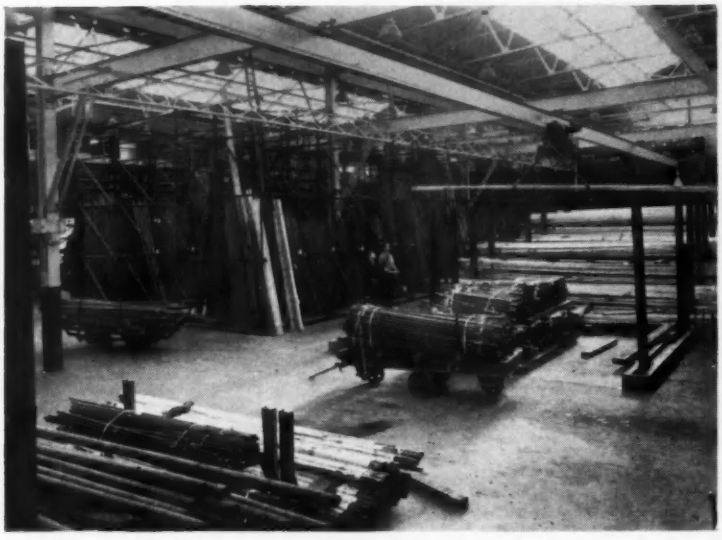


Fig. 4. Tubing section showing horizontal and vertical storage.

Fig. 5. Receiving banks showing electric hoist.

(C) The clerical section.

(D) The ancillary services: standardisation, statistics, disposals.

(A) The Buying Groups

There are three groups, each led by a group buyer, and the items with which they deal are broadly classified into:—

Group 1: Engineering plant, tools and stores, chemical, medical and scientific supplies, timber.

Group 2: Iron and steel (structural, pipes and fittings), non-ferrous metals, including brass and copper tubing, valves, cocks, fittings.

Transport, road and railway.

Hardware.

Textiles.

Group 3: Gas meters, appliances and spares.

General maintenance items.

Each group buyer has a purchasing team which includes an assistant, a general clerk and invoice clerks who concentrate on the price checking of invoices but also maintain price records and other information relative to purchases which are available for the group buyer.

In addition to the three buying groups there is also a stationery buying section and a specialist timber buyer.

(B) The Contracts Section

The contracts section has an office of its own and concerns itself with contracts for work and erection and maintenance of plant and equipment. Close liaison is maintained by this section with the Chief Engineer's and the building and property maintenance departments, who provide the technical specifications, and also with the Chief Accountant's department in the matter of expenditure authority.

(C) The Clerical Section

This section aims to relieve the group buyers of the responsibility for routine clerical work and it therefore maintains the central registry, based on a commodity index, and is also responsible for the receipt of all incoming mail and requisitions and the process of converting approved requisitions into orders, which are finally checked, franked and mailed in the separate post room.

(D) The Ancillary Services

Disposals are dealt with by a senior clerk under the direction of the Stores Buyer. The Statistical Clerk is responsible for keeping and producing figures relating to the financial commitments month by month, and a commodity and departmental analysis based on the value of goods ordered and contracts placed. Other valuable statistical information necessary to the buying function is produced and recorded.

The Secretary of the Board's Standardisation committee is on the staff of the Stores Buyer and, in addition to his duties for that committee, he is responsible for the maintenance of supplies of correct specifications for use with enquiries, orders and contracts generally.

Stores Superintendent's Department

The Stores Superintendent is responsible for ensuring that the current policy regarding stock levels and methods are correctly interpreted at all Stores. In addition, he is responsible for the operation and management of Central Stores.

The supervision of stores other than Central Stores is carried out by:—

(*a*) Examination of all requisitions to ensure that they are reasonable as to quantity, that they conform to proper standards and that they are correctly authorised.

(*b*) Agreeing with the local management desirable maximum and minimum stock levels for the material in their stores.

(*c*) Examination of periodical returns of stock levels.

(*d*) Periodical visits to inspect storage accommodation and to ascertain whether any obsolete or surplus stocks are held.

(*e*) Control of all obsolete and surplus stocks and scrap.

Fig. 6. Demonstration of portable hand-operated 8 cwt. hoist.

(*f*) Inspecting all scrap metal bins to ensure correct grading of such material.

(*g*) Preparing schemes for new stores or improvements in existing stores where required.

Close liaison is maintained with the Stores Buyer's department and using departments to ensure that forward budgetting of requirements is in accordance with the latest supply position and user requirements, paying special regard to forthcoming sales campaigns and special projects. Constant review is made of Central Stores items so as to spot any redundant or obsolete stocks at the earliest possible moment and to arrange for their disposal.

The accounting section in the general office is responsible for the charging of the cost of issues to the various using departments, and preparation of the costs accounts of the department. During an average year this section handles 17,000 invoices, 100,000 issue vouchers and 15,000 return to store notes.

Four comptometer operators are employed in valuing orders after the stock rates have been inserted by the stock ledger clerks, and making weekly summaries of orders so that summarised posting can be made in the stock ledgers.

The printing section is responsible for:—

(*a*) The addressing of all gas accounts and preparation of rental records.

(*b*) The printing of all wages and salary sheets, clock cards, time cards, etc.

(*c*) The printing of a vast quantity of forms of various types.

The following figures give some indication of the general printing work performed by this section during twelve months:—

4,500,000 office forms.
1,500,000 rental letters, etc.
600,000 appointments cards and dial cards.
60,000 new price leaflets.
320,000 pages of Watson House Centre reports.

The literature section deals with the stocking and distribution of all publicity material throughout the Board. In addition it distributes certain publications, for example, 'Modern Living,' to other Boards throughout the country.

The Warehouse

The Warehouse Manager is responsible for the general working and upkeep of the warehouse, the scheduling of transport for distribution and the engagement of stores personnel.

The Chief Storekeeper is responsible for the day-to-day operation.

The warehouse holds stocks of approximately 16,000 items and the rate of issue is about £1,500,000 per annum.

Except for tubing, supplies from contractors are received at the receiving bank at the east end of the building; this bank has direct access to both levels of the store. An assistant storekeeper is responsible for the unloading of material and directing it to the appropriate section, where the section leader is responsible for checking the correctness of the delivery.

Steel tubing is received at the western end of the building where an electric hoist moves the tubing direct into horizontal storage racks or to a trolley for conveyance to the vertical storage racks. Before consignments are finally accepted as available for issue they are subject to examination by the stores testing section to ensure that the quality complies with the Board's standards.

The stocks are divided into the following groups:—

Stationery, hardware, brass, copper, steel tubing, service fittings, oil goods, catering and miscellaneous, clothing, domestic lighting, public lighting, sundries, tools, works stores.

A vocabulary of stores arranged under these sections is in the hands of all using departments, who are requested, when preparing orders, to make out separate orders for each section.

On receipt by the general office the orders are scrutinised to ensure that stocks are available and quantities are reasonable. The orders are then passed to the stores where they are distributed to section leaders, who are responsible for preparing material for issue by the afternoon of the

Fig. 7. Service fittings section, showing ratio counting machine.

Fig. 8. 'Return to stores' section—salvage recovery.

day immediately prior to the scheduled delivery day.

A transport schedule is in operation whereby depôt stores may receive three visits per week from Central Stores delivery lorries: lighting fittings on one day, tubing on another and general stores items another day. Stationery is delivered by the Board's messenger parcels service. Urgent requirements can be supplied within 48 hours of a telephone request without the necessity of employing special transport.

Owing to the nature of the material stocked at Central Stores, mechanical handling aids introduced had to be suitable for use with a great variety of types and sizes of articles. The following appliances have been adopted and proved to be extremely satisfactory: A one-ton mono-rail hoist at the receiving bay for dealing with heavy packages; a two-ton mono-rail hoist in the tubing section for handling tubing; a small portable 8 cwt. hoist for lifting small loads; a special barrel-lifting truck; an electric truck for hauling the 7 two-ton tubing and 52 one-ton general purpose trucks purchased. These latter trucks were specially designed to be of universal usage, in that whilst they can be used with four sides, any or all of the sides can be removed, converting the box type truck to an open-sided or simply a platform truck.

In addition to the normal weighing machines the store possesses a ratio counting machine for quick counting of large quantities of similar sized articles, and a 30 cwt. floor level platform scale which enables material to be weighed whilst still on trucks.

When planning the new store at the Great West Road it was decided that the bins and racks should, wherever possible, be of the fully adjustable steel type. Special storage equipment had to be used in the following instances:—

Steel tubing, up to 15 ft. in length, which is stored upright, is accommodated in bins made from steel-scaffolding and having wooden floors.

Steel tubing, 21 ft. in length, is stored horizontally between vertical posts.

Brushes, which require to be hung, and public lamps, are suspended from racks made from steel tubing.

Coils of lead pipe are stored on edge leaning against brick walls.

Nuts, bolts and rivets are stored in 1 cwt. sacks in brick bins.

Fig. 9. A view inside the testing section.

Some idea of the quantity of material flowing through the stores can be gained from the following issues during 12 months:—

Tubing	3,400 tons
Malleable iron fittings	1,500,000
Mild steel fittings ..	1,500,000
½ in. plain tubing ..	1,000,000 ft.
1 in. coated and wrapped tubing ..	620,000 ft.
Towels	40,000
Yellow bar soap ..	75 tons
Soda	40 tons
Clogs	7,000 pairs
Gloves and mitts ..	50,000 pairs
Hacksaw blades ..	112,000
Mantles	850,000
Dry batteries ..	150,000

Using departments return to the Central Stores considerable quantities of used or damaged stock which is sorted into the following categories: fit for

Fig. 10. The spacious dining room for the stores employees.

stock; fit for repair; and scrap. The scrap is accumulated in separate brick bins according to type and grade of material.

It is necessary to review, at frequent intervals, the standard of classifications in the two groups 'fit for repair' and 'scrap,' taking into consideration the current supply and stock position, repair charges and scrap values. All scrap is sold by the Stores Buyer. The value of material sold as scrap during the last 12 months was approximately £18,000. The value of material returned to store after repair in one year approximates to £16,000.

Testing and Inspection

The testing and inspection section is housed in the warehouse but is responsible to the Officer in Charge of testing stores, who is a member of one of the Board's research and development departments. In addition to inspection counters in each of the warehouse sections, a separate test shop is fully equipped with the necessary services, including compressed air and gas, etc., and with a comprehensive range of specially designed apparatus for the examination of cocks, valves, governors, flexible tubing and all items where sound quality is essential for the safety of the public.

In some cases 100 per cent. testing is carried out and in others proportional sampling based on the previous record of results of tests on items of similar type or from the same supplier.

In addition to routine testing and inspection, physical and chemical laboratory tests are necessary in some cases. At present samples requiring such tests have to be sent away to one of the Board's laboratories, but provision has been made for a suitable laboratory within the building.

Welfare

Amenities for the employees include a canteen with dining rooms for the staff and work people, sports rooms and ladies' rest room. There is also a fully equipped first aid room with a trained first aid team of volunteers from the employees, a flourishing sports club—The Censtorians—engages in a wide variety of activities and turns out formidable cricket and football teams and also teams for indoor games such as table tennis. Other features of the club are a lending library, an art section and arrangements whereby party bookings for sporting events, theatres and other entertainments may be made.

Joint Consultation

Two committees meet regularly for the purpose of joint consultation between representatives of the management and the employees, the Central Stores Joint Consultative Committee on which employees of staff status are represented, and the Central Stores Joint Works Committee, of which representatives of non-staff employees are members.

INDUSTRIAL SAFETY

Gasworks plant and other contractors serving the gas industry are taking an active part in the work of the London Building and Engineering Contractors' Accident Prevention Group, under the Chairmanship of Mr. W. Dawes, of the Woodall-Duckham Construction Co., Ltd. At their last meeting 45 members of the Group heard Mr. H. G. Harris, of Peter Lind, Ltd., tell a grim tale of the loss of life and health in this country caused by industrial injuries, and took note of his plea for an intensive effort to make everybody concerned feel that safety is a personal matter. Last year nearly 800,000 claims (16,000 a week) for industrial injury benefit were met, the bill for which was over £10 mill. Something over 3,000 industrial death benefits were awarded and there were approximately the same number the year before. Compare this with the 5,000 odd deaths on the roads. The significance of the comparison will be realised when we consider that 23 mill. are employed in industry and over 50 mill. are exposed to the hazards on the roads. If road deaths are a serious matter, how much more serious are industrial deaths which occur almost one and a half times more often. These 800,000 workers were away from work on an average for just over four weeks, a loss to industry of 3,200,000 man-weeks, the equivalent of between 60,000 and 70,000 men and women away from work for a whole year, or putting it bluntly, equivalent to the total incapacity of the whole working population of a town the size of Brighton for a whole year. Everyone should be encouraged to take greater interest in safety. The avoidance of accidents, in the end, does not depend on statutory rules and methods, but on the education of employers and employed to be always on the alert. All should be made to be continuously aware of the fact that accidents will occur unless steps are taken to prevent them.

From the Presidential Address to the London and Southern Junior Gas Association

World Fuel Resources and Gas Appliance Testing

By E. W. B. DUNNING, B.Sc., A.R.I.C., M.INST.GAS E.,
North Thames Gas Board, Watson House.

CONSIDERING the natural fuel resources of the world —*viz.*, coal, oil, and natural gas—coal production still holds pride of place with twice the production of oil. The production of natural gas at half that of oil is surprisingly high; and when it is considered that this is nearly all produced in the U.S.A. and that in the other oil-producing areas it is wasted, potentially the natural gas production could equal that of oil. The U.S.A. is extremely rich in fuel resources when its population is considered. Europe is rich in coal, but extremely poor in oil resources. On the other hand, the rest of the world is poor in coal resources but equals the U.S.A. in oil production, while both Europe and the rest of the world have comparatively little natural gas production.

Although coalfields are widely distributed, some areas have better seams or are more intensively worked. Once again the U.S.A. has the largest production. Both Great Britain and the U.S.S.R. are very large coal producers, followed by the Western German Republic. South America has little coal, but this is to some extent balanced by the oil resources of its northern part. Asia could be, and probably will be, further developed (the Soviet part of Asia has been separately considered in the U.S.S.R. total). Africa, other than the Union of South Africa, has very little coal production.

Four-fifths of the world's gas supply is derived from natural gas, and almost the whole of the remainder from manufactured gas. Liquefied petroleum gas accounts for only 5%, of which three-quarters is in the U.S.A. Nearly half the manufactured gas is produced in the U.S.A. and an equal quantity in Europe. The rest of the world accounts for little. Rather surprisingly to us in this country, three-quarters of the world's manufactured gas is made in coke ovens with the primary purpose of producing metallurgical coke, only one quarter being produced at gasworks designed for making gas.

The price of coal and fuel oil to the consumer in the United States is over twice the 1935-39 average, while the general cost of living is just under twice the pre-war figure. On the other hand, natural gas is almost the same price now as pre-war, and may be cheaper than the cheapest fuel oil, half the price of coal, and one-sixth the price of electricity.

Gas production in the United States, compared with Great Britain, is twenty times as great for a population just over three times as large, or over seven times per head of population. The greater proportion of the United States output is natural gas and the amount wasted and used in the gas fields themselves has been ignored in the total. The production of liquid petroleum gases is surprisingly high at about half that of coke oven gas. This liquid petroleum gas is normally supplied by road tankers straight into large permanent tanks and not delivered in small containers, as with Calor gas in this country. The quantity of gas made by gas supply authorities has been rapidly falling and now is relatively small, and is actually two-thirds of that made in Great Britain. It is carburetted water gas; there are no coal gas manufacturing plants.

Comparing the output of Great Britain with the other principal producers, this country is unique in that the greater proportion of gas produced (two-thirds) comes from the gas supply authorities' own plant, designed primarily for making gas. This quantity of gas is about equal to the production of the rest of the world's gasworks, excluding the United States. Western Germany, Japan, and Belgium have very high proportions of coke oven gas, while the Saar produces only coke oven gas. Venezuela, on the other hand, only produces natural gas; and although the actual production is over six times the total given, it is estimated that 85-90% is flared to waste. Canada and Italy also rely largely on natural gas, as does the U.S.S.R., but its coke oven gas production has not been disclosed. The United Kingdom and Australia have no significant natural gas supplies. The production of liquid petroleum gases is small, except in France, where it reaches a quite significant amount, and is sold in Paris at the same price as manufactured gas.

The domestic use of gas in this country is high, both actual and relative to total production. Western Germany, Canada, and France have fairly high domestic usage, each about one-quarter of this country, but only in France is the proportion of the total production also high. Nearly all the gas produced in Italy is sold for industrial purposes. The large production of coke oven gas in Western Germany, Japan, and Belgium is reflected in the proportion of gas used by the industry itself.

Nowadays, there are three main sources of design—Great Britain, the European continent, and the United States. Appliances which have been developed in Great Britain on mass production lines for the large British market are exported to the colonies, Gibraltar, Malta, Cyprus, Singapore, Hong Kong, and to a less extent, to the Dominions, South Africa, Ceylon, India, New Zealand, and to some extent, Australia, and also to Portugal. Simplified cheaper appliances are, however, made locally in some colonies, for the more numerous poorer population. British appliances were also largely sold by British financed undertakings in South America, but now, with nationalisation and tariff restrictions, similar appliances have been designed locally or British parts assembled, except in Uruguay and Chile, which still use British appliances.

The European Continental design extends to North Africa, the Near East, and to South America, particularly Argentina and Brazil. The East Indies, which were originally Dutch, are now turning to British appliances. Japan manufactures locally and has largely copied British and later German designs, although now there is a strong American influence.

The high pressure selling and love of gadgets of the United States has influenced appliance design in North America. Canada closely follows American design, except for British Columbia, which is very pro-British. Mexico City is a miniature United States, but the rest of Mexico is largely undeveloped. The last war, which cut South America off from the European continent, had the effect of introducing American appliances, and now the more elaborate appliances are all of United States resign, especially in Venezuela, the oil towns of which are exceedingly prosperous. Australia, originally an importer of British appliances, has been influenced by American design, and now appliances are largely home produced, fostered by tariff restrictions.

Testing of Gas Appliances

Nearly 20 years ago, Lacey and Masterman reviewed this subject in a paper to the Institution of Gas Engineers, entitled 'National Policies Governing the Testing of Gas Appliances, and it is interesting to see how conditions have changed since.

In this country there were then a number of laboratories run by the larger gas companies, each with its own test methods. Now the testing authority is the Watson House Centre, although the actual tests may be carried out by one of a number of laboratories. Standards are drawn up by an industry committee under the aegis of the B.S.I. on which appliance manufactures, gas boards, and user organisations are represented.

Belgium, Holland, and Switzerland have similar arrangements to Great Britain, while in Australia, Denmark, France,

Germany, and the United States, testing and approval are controlled by committees on which both makers and gas undertakings are represented. Great Britain appears to be the only country in which the cost of testing is borne entirely by the gas supply authorities.

Then, as now, the major difference between our standards and those in other countries is that they have an approval mark or seal of quality, and we do not. The Gas Council has recently introduced a list of approved domestic appliances which goes some way to bridge the gap, but the main reason for the difference is that in no other country is the retail sale of appliances so concentrated into the hands of the supply authorities. With nationalisation, uniformity of requirement between these authorities has increased. An approval mark is applied in Australia, Belgium, Denmark, France, Germany, Holland, Canada, Switzerland, and the United States. In general, the approval mark is applied only to domestic appliances, but in Denmark, Holland, and the United States catering appliances are included. In Germany and Holland, the fitting of unstamped appliances is forbidden by law, while in other countries the mark, while generally used, is not obligatory. In the United States there is for cooking appliances a higher quality C.P., or certified performance, standard.

In this country standards covering combustion requirements, bafiler testing, and cooking tests were prepared shortly after the review mentioned above. Since the war, the combustion requirements have been revised, and B.S. 1250, covering general and specific tests for all types of gas appliances, has been prepared. This specification is now undergoing complete revision and many new test methods and clauses are being introduced. In addition, a completely new standard for catering appliances (B.S. 2512) has just been published. Recently, a standard for cooking appliances using liquid petroleum gases (B.S. 2491) has been published, which is to a large extent co-ordinated with the revised B.S. 1250. Recently, the International Gas Union has been comparing the test methods used by its member countries with a view to suggesting a measure of uniformity. This is of particular importance on the European continent, where there is considerable import and export of appliances between the different countries.

Many other countries have standard methods of test, but without the approval mark. These include Italy, Japan, Sweden, U.S.S.R., and Great Britain, which are also included in the International Gas Union investigation, and Argentina, Australia, Czechoslovakia, Hungary, Poland, Mexico, Roumania and Finland, which are not. Canada closely follows the United States, and the Canadian Gas Association is affiliated to the American Gas Association. In many countries, including Great Britain, standards as such do not exist for industrial equipment, but the requirements of the insurance organisations and the factory inspectorate or similar bodies do form the basis of test requirements. Japanese appliances are advertised as being approved by the U.S. Eighth Army, probably for use by the occupation troops.

The characteristics of the test gas are generally a mixture of coal gas, water gas, and producer gas, although in the United States it is necessary for appliances to function on natural gas, propane, butane, and butane-air. France, Germany, Holland, and Sweden also use a type of aeration test burner. A number of countries, notably France, also have separate standards for liquid petroleum gases; in addition, the Shell organisation has minimum requirements for domestic appliances. Combustion methods and standards are similar, but the Australian and British standards of 'CO/CO_2 ratio less than 0.02' is less severe than other countries. However, our more stringent conditions are regards overload and changes in gas quality really make our tests more severe. The carbon monoxide in the dry air-free products is often used instead of the CO/CO_2 ratio as a criterion of combustion.

All countries have tests for ease of ignition and for lighting back. In Sweden and Italy these tests are made with a test gas to which a proportion of air has been added. The United States also tests the tendency for flames to blow-off on low flame speed gases such as methane, propane, and butane. With the increased use of natural gas in Europe, other countries are considering a similar test. Most countries have standardised the direction of rotation of tap fans, but there is no general agreement between them. Gas soundness testing is general, as are floor temperature requirements. Denmark and Sweden have maximum temperature tests for walls as in the new British Standard; this may be because of the greater use of wooden walls in those countries. The United States and Australia have tests for the strength of the appliance; specified loads are placed on open cooker oven doors and on the cooker hot-plate. Japan tests castings by hitting with a 100-gramme hammer, reminiscent of the railway wheel tapper.

Belgium and Germany, in common with Great Britain, do not allow flexible connections where there is a tap on the appliance, while in France the connection must be visible so that any deterioration can be seen. Ease of cleaning, replacement of parts by the user, and easy maintenance are usual requirements.

In addition to general tests, specified tests are carried out on the different types of appliance. As would be expected, tests for cooking appliances are universally applied, and these are the most detailed, although grill tests are specified only in Belgium, France, and, of course, the United States. Standards are laid down for water heaters and space heaters in Australia, Belgium, France, Germany, Holland, Japan, Switzerland, and the United States. Standards for space heaters also exist in Sweden, and for water heaters in Denmark. Standards for central heating appliances are found in Belgium, France, and the United States. Japan and Holland also test laundry irons. Australia, Belgium, Switzerland, and the United States have tests for refrigerators. The United States has the most comprehensive series of standards 37 in all, including laundry stoves, incinerators, hotel and restaurant appliances, and accessories such as pilots, governors, draught hoods, and gum traps, as well as the types mentioned above.

Differences in Method

A detailed review of the methods of test would take too long, but some of the more important differences might be mentioned. With hotplate testing on the European continent, the size of the efficiency vessel is related to the burner rating, large burners being tested with large vessels and vice versa. This allows the efficiency requirement to be the same for all burners. In Australia, Austria, Germany, Holland, Sweden, and Switzerland temperature distribution on the hotplate is determined by examining the scorch pattern on a disc of wood. All European countries, except Great Britain, have a test to ensure that the boiling-over of water (or sometimes of milk or coffee) does not extinguish the flames. The minimum distances between burners is also standardised; these distances (about 10 in.) are generally greater than in this country.

The United States and Australia have practical cooking tests on grills, while France has a complicated radiation test. Speed of oven heating and maintenance tests are general, but no country has such a comprehensive series of cooking tests as we have. Australia uses our tests but does not specify the complete meal test. Some kind of cooking test is used in France, Czechoslovakia, Denmark, Holland, Sweden, and the United States. In the latter country, the colour distribution of cakes is determined with a photo-electric reflectometer. France, the home of good cooking, uses an artificial roast (an iron box filled with sand), while Japan and Switzerland have paper scorching tests.

France has standardised thermostat markings rather similar to those in use in this country, whereas Australia and the United States use Fahrenheit temperature markings such as are used on British electric cookers. It is general to specify that oven doors shall not latch, as a protection against oven explosion, and in Belgium the door fit is tested with bank notes!

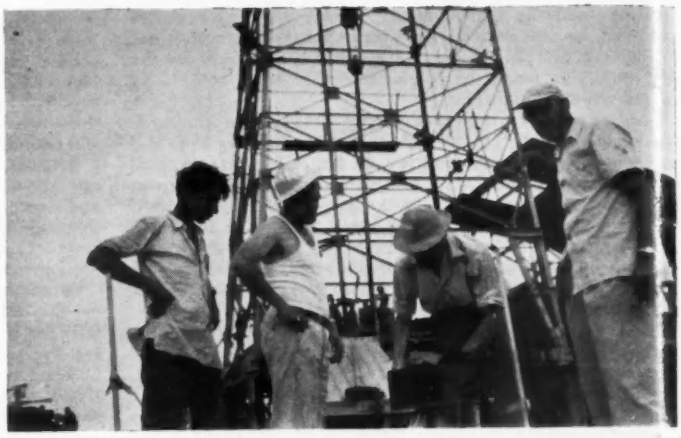
In general, the thermal efficiency of instantaneous heaters is determined by a continuous flow method as in this country, while storage heaters are filled with cold water, heated, and then the gas shut off and the water withdrawn. In Holland, draw-off tests are made in which a quarter of the storage is drawn off at a stated interval such that the average temperature of the water drawn is 150°F. and at twice and four times this interval. France and Holland have maximum heating-up times. Flues are necessary for storage heaters with heat input rates greater than about 7,500-10,000 B.Th.U. per hour in Belgium, France, Denmark, Germany, Holland, and Swizerland. In most places, instantaneous heaters can have ratings of about five times that of storage heaters without flues.

The radiant efficiency of space heaters does not appear to be measured, except in France; the flue loss is the usual measurement. France and Holland also have tests for burner noise.

Sui gas pipeline corrosion survey

By G. McHARDY and

R. C. J. WINDEBANK



Observing soil resistivity adjacent to drilling of new gas well supplying pipeline.

THE SUI GAS TRANSMISSION CO., LTD., have arranged a project for the laying of a pipeline from the Sui natural gas deposits in Baluchistan to the important city of Karachi. In this article a brief account is given by two members of the engineering staff of Cathodic Corrosion Control, Ltd., of the methods used in examination of the terrain with a view to preventing corrosion of the pipeline.*

When the Sui gas pipeline project was planned it was believed that the route chosen for it would be found corrosive to a greater or lesser extent, and, although no detailed survey had been carried out, it was recommended that the line should be cathodically protected. In order to confirm this recommendation a corrosion survey was undertaken to obtain data for the design and engineering of a cathodic protection system.

A corrosion survey, such as the one undertaken, entails detailed examination of the soil along the pipeline route, and this includes the measurement of the soil resistivity at several depths at frequent intervals, also analyses of soil samples from representative points.

While the survey party was assembling its transport and equipment at Karachi a low-flying aerial survey was made over the 350 miles of the pipeline route in order to obtain a general view of the terrain. A recently completed aerial photographic survey carried out by the Hunting Aerosurveys, Ltd.,

Fig. 1. Staff carry out electrical tests on edge of Sind Desert.

showed a very clear picture of the route. Invaluable local information was obtained from The Sui Gas Transmission Company engineers, who were engaged on a route survey. Correlation of the information obtained from these services dictated the sequence of operations of the survey team.

The Sui gas field is situated on a barren plateau some 350 miles north of Karachi in the Bugti foothills of Baluchistan, and from this point the route drops down to the Indus valley. Twenty miles from Sui there is an abrupt change from barren broken country to cultivated land and, except for a short portion across a corner of the Sind Desert (Fig. 1), this continues through agricultural land to a point some 100 miles from Karachi. The last 100 miles of the route is along the barren foothills of the range of hills on the western side of the Indus valley. Apart from Karachi, there are only two

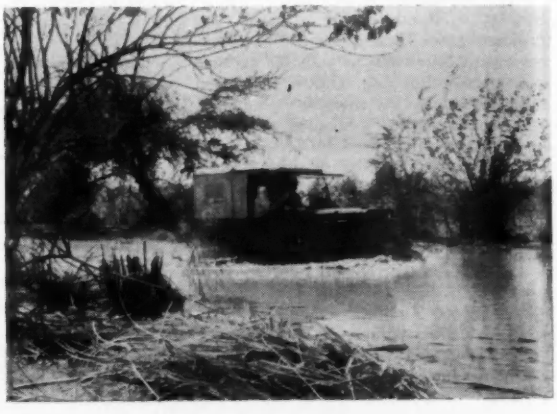


Fig. 2. Jeep traversing flooded track.

major towns on the pipeline route, Sukkur, some 75 miles of Sui, and Hyderabad, 120 miles north of Karachi.

The survey period was March-April and only a few weeks were available prior to extensive irrigation of the sector between Hyderabad and Sukkur, which irrigation makes movement by motor transport practically impossible. It was therefore decided to commence operations from the eastern bank of the Indus River at the Kotri Barrage, which is adjacent to Hyderabad, work north to Sukkur, thence on to Sui and finally back to Karachi from which centre the last 100 miles was surveyed.

The method of the survey was to measure at five mile intervals the soil resistivity at depths of 1, 3 and 10 metres by means of an earth megger using the four-pin method. Representative soil samples were also taken at points where changes in soil conditions occurred. The survey team's transport consisted of a four-wheeled drive Jeep with trailer and station wagon (Fig. 2). The party had to be entirely self-supporting and while in the field augmented their stores by shooting wild game. Between the Kotri Barrage and Sukkur no particular difficulties were experienced and on reaching Sukkur a day or two was spent there while the transport was serviced.

From Sukkur to a point some 20 miles from Sui proved to be the most difficult to traverse. This is a paddy field area which had already been flooded for irrigation purposes, and in order to traverse five miles of pipeline route, the survey team had to travel an average of 50 miles. The route between

* The Sui Gas Transmission Co. Ltd., have given their permission for the following detail to be published.

Kotri and Karachi crosses innumerable nullahs (water courses) with very few access tracks. The Sui Gas Transmission Company placed a helicopter at the disposal of the survey team and this enabled this particular area to be surveyed in one day, whereas by land transport one or two weeks would have been required (Fig. 3). A chemical and micro-biological

Fig. 3.—Helicopter used in the survey work.

analysis of numerous soil samples confirmed survey observations that the entire route is generally corrosive to a greater or lesser degree.

The authors wish to express their thanks to the staff of the Sui Gas Transmission Company, who provided invaluable information which greatly facilitated the work of the survey team, and to K. A. Spencer, B.SC.TECH., A.M.I.CHEM.E., Consulting Engineer, who was associated with this corrosion survey.

Corrosion Prevention Problems

Report of O.E.E.C. Mission to the U.S.A.

In December, 1952, the Chemical Products Committee of the Organisation for European Economic Co-operation agreed on a technical assistance project under which a mission was to be sent to the United States to study problems of maintenance in the chemical industry, with special reference to corrosion. The mission was divided into three groups to investigate the heavy and the light chemical industry and the petro-chemical industry. The programme was accepted by the Mutual Security Agency, on the understanding that the main task would be to study those methods and materials used in anti-corrosive maintenance in the United States which were less familiar in Europe. Members of the mission (from Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Sweden, and Turkey) carried out a six weeks tour of the States in 1953, visiting nearly 40 research institutes and industrial firms. Their report has now been published by the O.E.E.C., 2 rue André-Pascal, Paris, 16e.

Economic Consequences

The report points to the more general awareness in the United States than in Europe of the economic consequences of corrosion damage. The unnecessary wastage aspect is everywhere stressed. Indeed, the Americans are very much alive to the incidence on manufacturing costs of maintenance and replacement charges, plant shut-downs, and other indirect losses due to corrosion attack. The cost of control methods and products is viewed not as 'first cost,' but as 'ultimate cost.' It is pointed out that, since the United Kingdom did not nominate any representative to take part in the mission, references to Europe should not necessarily be taken to include the United Kingdom.

Organisation of fundamental research (backed by the State and industry) is stated to be efficient; and the mission was impressed by the high degree of co-operation between individuals and bodies such as universities and private industrial research departments. Progress in plants in the fight against corrosion is assisted by the practice of allowing, and even encouraging, direct inter-departmental discussion at all levels. 'Industrial groups and associations in Europe could with profit collaborate in the study of specific common corrosion problems with a wide incidence and so economise by sharing research costs.' Two forms of such co-operation research are envisaged: (a) Individual research where the results are put together and discussed; (b) collective research under sponsorship. Governments should sponsor or at least contribute to research, fundamental or applied, likely to reduce material wastage.

The report goes on to say that, in the matter of design to combat corrosion, precept in the United States appears to be ahead of practice. In Europe, as in the United States, when new plants are built, such questions as siting and plant layout, for example, are given due weight. But when processes are changed, or manufacture switched to other products, conditions frequently militate against good design. In the course of discussions the impression was gained that in the United States, as in Europe, the plant engineer with his wealth of practical experience is not sufficiently consulted at the design stage. 'Not only must corrosion variables during plant operation be allowed for as fully as possible, but factors introduced by shut-downs, operational accidents, and overloading must also be taken into account. Design responsibility does not cease when a plant comes on stream. Faults must be watched for in operation and their origin traced and rectified.'

Service Tests Essential

Among other conclusions drawn by the mission are the following. In regard to test methods, accelerated corrosion testing in the laboratory serves no useful purpose. Service tests alone give a true indication of performance. On the question of barriers, three-coat paint systems with a minimum total thickness of 5 mm. should be regarded as standard in normal conditions. The choice of surface preparation, to be viewed in the light of the job in hand, is an important factor in paint economics; and surface preparation standards should be established. Periodical re-touching and single maintenance coats are recommended before corrosion and deterioration of the paint film manifest themselves.

The mission strongly recommends the use of standard reference numbers for steel composition in Europe. The co-operation of vendors of anti-corrosive equipment and materials is frequently invited by United States plants with the aim of improving anti-corrosive performance. This is appreciated by the vendors and is of benefit to users.

The corrosion engineer is generally a 'convert' from other engineering fields who has developed a special interest in corrosion and anti-corrosion. Although the larger plants usually employ one or more, the corrosion engineer is by no means universally accepted. It remains to be seen if the more formal training now under consideration in the United States will be supported and if it will prove worthwhile. Engineers specifically interested in the causes and prevention of corrosion should combine to form either sections within appropriate technical associations or new, independent associations. Further, universities can play a valuable part in arranging short courses and refresher courses for plant engineers dealing with corrosion problems.

An Invaluable Service

Finally, the mission was impressed by the activities of the National Association of Corrosion Engineers in the U.S.A. This Association, comments the report, performs an invaluable service in co-ordinating anti-corrosion work. Its sections, organised on a local basis, serve as a meeting ground where engineers can discuss their corrosion problems and to some extent pool experience. The mission, which highly commends the idea behind this 'admirable organisation,' recommends the creation of a European counterpart.

Scientific Instruments Convention

It was stated at the British Scientific Instrument Industry Association's annual convention at Eastbourne that 23,000 people had visited the Association's stand at the international exhibition of scientific instruments held recently in Philadelphia. In his address at the official dinner of the convention, Mr. C. E. T. Cridland, President, said that no other industry had brought co-operation between member firms to so fine a pitch and that Britain had produced instruments, many of which had not been duplicated anywhere else in the world.

Sulphur Removal from Fuel Gases by Dry Methods*

By R. H. GRIFFITH, B.A., D.PHIL.†

In the concluding part of this article, reference is made to special forms of iron oxide, to recently developed designs of purifiers and to possible future developments; the discussion on the original paper is also included.

Almost the entire production of spent oxide from British sources is used to make sulphuric acid by the chamber process. The plant for this purpose is conventional in character, although the burners are different from those needed for operation on mineral sulphur.[18]

A description of a modern plant will be found in a paper by Millett,[19] who states that the process can be worked on mixtures of pyrites and spent oxide.

Burnt Oxide

The combustion stage leads to the removal of sulphur, tar and other organic matter, and any volatile salts in the spent oxide, and leaves a residue of finely divided anyhydrous a-Fe_2O_3, usually bright red in colour. This material has only a very low rate of reaction with H_2S, although it is frequently incorporated with fresh bog ore or part-spent oxide and is then gradually converted to Fe_2S_3. Its value as a purifying agent is increased by the addition of ferrous sulphate and slaked lime, or soda ash, as this treatment provides some hydrated a-Fe_2O_3. Mixtures of equal parts of new bog ore, part-spent oxide and burnt oxide are sometimes used.

When the iron content of the original purifying material is sufficiently high, the burnt oxide may be suitable for use by the steel industry in blast furnaces, but it has to be sintered before it can be applied in this way. It must also have a low phosphorus content if it is to be acceptable.

Solvent Extraction of Spent Oxide

When it is desired to recover the complex cyanides, known in the industry simply as 'blue,' the sulphur is first removed by carbon disulphide at atmospheric temperature, and the sulphur is then recovered by distillation of the solvent. The residue contains all the tar originally present in the spent oxide and is therefore not suitable for any purpose which requires sulphur in a high state of purity. This disadvantage is greatly reduced with hydrocarbons such as toluene or xylene and with chlorinated solvents, such as perchlorethylene. The solubility of sulphur in these solvents is relatively small at normal temperatures but increases rapidly as the temperature is raised. On cooling such solutions, the sulphur crystallises out in a relatively pure form and the bulk of the tarry impurities remain in solution. This process is described by Burlen and Newling[20] but has been operated only on a pilot plant.

Solvent extraction of spent purifying materials, to which reference is made below, is likely to receive more attention in the future as purer grades, or special granular forms, of iron oxide are used. Their treatment with solvents would be easier than that of spent bog ore, and after extraction they could be returned once or twice for re-use; this would materially lower the total expenditure on iron oxide.

SPECIAL FORMS OF IRON OXIDE

Raffloer's Process

The earliest process of gas purification which used specially shaped pieces of iron oxide was that of Raffloer,[21], generally known as the Gastechnik process. The plant designed for the use of this material was described by Thau[22]; 54 such plants are in operation in Germany. An account of the preparation of the spherical pieces has appeared in the '*Gas World*.'[23]

The shapes are made from a mixture of active iron oxide, lime and cement, with some filler such as sawdust to provide a sufficiently open texture. Their diameter is 0.6 to 0.8 in. and they are packed into towers through which they move countercurrent to the gas. A sulphur content up to 30 per cent. is achieved, and the balls are then extracted with a non-inflammable solvent, and returned to the process.[24] For treatment of two million cu.ft. per day, three towers 11 ft. 6 in. diameter and 40 ft. high are used; they are reduced at the base by a conical section to 12 in. diameter leading to a quick-acting spade valve and a gas lock for discharge. Spent oxide is revivified outside the plant, and total losses as dust amount to 10-20 per cent. of the oxide.

Nodulated Iron Oxide and Graded Press Cake

Another form of granular material has been described by Hopton and Griffith.[6] This is prepared by rolling a mixture of ground ferrous sulphate with slaked lime, while sprinkling with water, followed by screening and exposure to air. The product consists of a-$Fe_2O_3.H_2O$ held in pelleted form by hydrated calcium sulphate which acts as a binding agent.

Graded fragments of press-cake, consisting of a-$Fe_2O_3.H_2O$ without a binding agent, have also been used on a small scale.

Countercurrent Vertical Purifiers

For use with the specially prepared materials described above, or with other types of granular iron oxide, the best results would be given by countercurrent operation of gas and solid. In its simplest form this would involve passing gas up a vertical tube from which iron oxide was withdrawn at the bottom, while fresh solid was added at the top. This can be done easily on a very small scale, but as soon as the vessel becomes big enough for full-scale use, difficulties arise. The gas tends to flow upwards close to the walls, while the solid runs away from the centre of the vessel much more quickly than from the sides. Consequently only a small proportion of the contents of the purifier is working efficiently.

A plant designed by Humphreys and Glasgow, Ltd. (Williams and Thorne, Brit. Pat. 673,546) seeks to meet this difficulty by extracting spent oxide from the bottom of the vertical purifier by the slow movement of a rocking bar grate extending to the full width of the vessel. In another form of vertical purifier, described by Whessoe, Ltd. (Francombe and Stout, Brit. Pat. 695,350), the gas passes horizontally across a bed of iron oxide which is moving downwards. There may still be problems in such systems from mechanical losses of gas and of iron oxide, and from lack of uniformity in the movement of the charge.

A mechanised system of which the main features were described by Hopton[7] makes special provision to avoid crushing of the purification material. A plant on this principle is now approaching completion. It consists of two vessels, each with a working volume of 210 cu.ft. of iron oxide, for treating a total of 1 million cu.ft. of gas per day at a throughput of 100 space volumes per hour. Oxide from an overhead hopper is admitted to the upper measuring pouch by means of a valve[25] which allows oxide to run into the pouch until it is full, and the valve can then be closed without crushing or

* Abstracted from a paper contributed to the Institute of Fuel Special Study of Sulphur Conference, October 6 and 7, 1954.

† Director, London Research Station, Gas Council.

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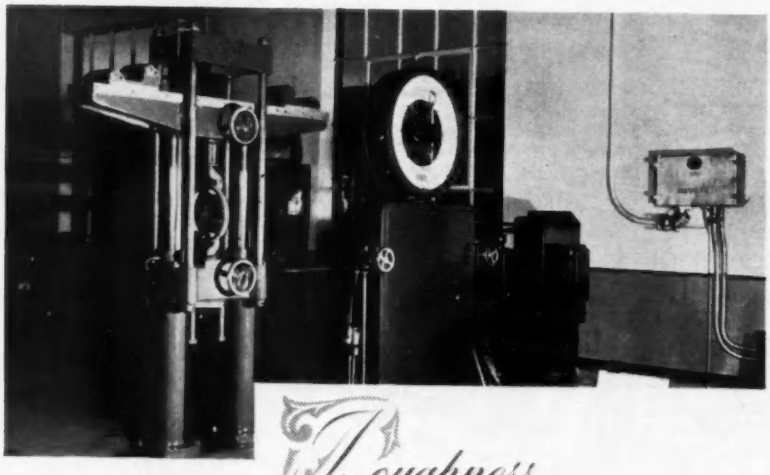
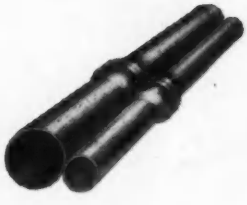


A tensile test being performed on a ring cut from a spun iron pipe.



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trapping any oxide. A similar pouch is fitted below the purification vessel, so that spent oxide can be withdrawn as fresh material is added at the top. Purging of these pouches, by inert gas into the gas stream, is a feature of the process. A separate revivifying vessel is also provided.

Fluidised Iron Oxide

Garside and Roberts[26] have carried out extensive small-scale experiments on the removal of H_2S from nitrogen by means of iron oxide in a fluidised state. As a result of this work they proposed the use of a two-stage system; in the first stage the bulk of the H_2S was removed by partly-spent solid, while the final traces were removed by more active iron oxide in the second stage. It proved necessary to keep the temperature below 40°C. and the moisture content above 5% or the material became inactive; this is in keeping with information presented earlier in the present paper. Many questions remain to be answered before fluidised purification can be applied to the gas industry, as the effects of components other than H_2S have not been studied. Moreover, iron oxide in an active condition is a relatively soft solid, so that heavy loss of dust might result from the use of grains in the range of 72 to 200 B.S.S. at space velocities of about 1,000 volumes per hour.

THE COST OF PURIFICATION

Figures for the capital and operating cost of various types of purifier in 1952 were given by Hopton.[7]

For treating 7.5 million cu.ft. of gas per day in three streams each of four boxes 36 ft. square and 6 ft. 6 in. deep, the figures were: Ground-level boxes, £170,000; elevated boxes, £200,000; elevated boxes with overhead floor and roof, £240,000. These figures include cost of foundations, handling plant, ironwork, connections and valves.

The costs of tower purifiers and of tower box purifiers lie between those of conventional elevated boxes and elevated boxes with overhead floor and roof.

The average operating cost for oxide purification in the district of the North Thames Gas Board formerly under the control of the Gas Light and Coke Co. was 0.173d. per therm for the year ending March 31, 1951.

FUTURE DEVELOPMENTS

Although there are still some gaps in our knowledge of the iron oxide purification process, it can be operated with very high efficiency. So long as the present very exacting standards of purity apply, the dry-box system will remain attractive to many sections of the gas industry because of its reliability. The main directions in which improvements are likely are: (1) reduction in the capital cost of the plant, by designs giving better distribution of gas; (2) manufacture of purification materials of uniform activity and size; (3) complete mechanisation of handling at every stage. It is interesting to remember that the weight of material to be handled, although large, is very much smaller than that of liquid reagents when these are used for removal of H_2S from gases. Precipitated or shaped forms of iron oxide may prove attractive for special purposes, especially for the removal of the final traces of H_2S, but they would be expensive for general use unless the sulphur could be easily extracted from them by a method leaving them suitable for re-use.

Acknowledgment

In the preparation of his paper the author had much assistance from many of his colleagues, and particularly from G. U. Hopton. The data in Fig. 1 were provided by R. J. H. Banks, and the paper was published by permission of the Gas Council and the North Thames Gas Board.

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DISCUSSION

Dr. Monkhouse said that dry box purification was an old and well-established process for the removal of sulphuretted hydrogen from carbonisation gases. It had no moving parts, and as long as reasonable control was adopted the plant was relatively trouble-free. It also could maintain the gas well within the statutory limits allowed for sulphuretted hydrogen.

It had always been realised that although the chemical equation of the absorption of sulphuretted hydrogen was relatively simple, the cycle of sulphide formation and oxidation to sulphur was much more complex. The problem was complicated by the varying physical properties of the iron oxide available, with differing degrees of reactivity.

Two pieces of research had helped considerably in understanding the process: i.e., the work of Griffith and Morcom on the different forms of iron oxide present in the iron ore, and their different degrees of reactivity; and that of Dent and Moignard on the methods of operation, and the avoidance of back pressure.

Although the process occupied considerable space and required labour in emptying and charging the boxes, there had been an increasing use of mechanisation in the standard box method and the development of the tower and tower box purifiers. The process of discharging oxides could be somewhat unpleasant, and the smell could be very persistent.

The spent oxide process was a valuable indigenous source of sulphur and produced about one-fifth of the sulphuric acid requirements. As Dr. Griffith remarked, almost the entire production of spent oxide from British sources was used to make sulphuric acid by the chamber process. Only at a few plants was spent oxide used for the manufacture of strong sulphuric acid (98 per cent.) by the contact process. For such a process the spent oxide should have a low moisture and tar content.

Since the development of the electrostatic precipitator and the improved methods of working purifiers, it should be possible to produce a greatly improved spent oxide more acceptable to the sulphuric acid manufacturer. Such a spent oxide might command a higher price and so reduce the cost of oxide purifier, which Dr. Griffith gave for the North Thames Gas Board as 0.173d. per therm.

The other possibility was the solvent extraction of spent oxide and the recovery of sulphur. This process again required a spent oxide low in tar. It would be interesting to know how such a method of extraction compared in cost with the selling price of sulphur and spent oxide.

He strongly agreed that the dry box system of purification, although it had been in use for 100 years, still remained the most attractive process to the gas industry.

Mr. K. W. Francombe (Whessoe, Ltd.) questioned Dr. Griffith's statement that boxes 36 ft. square represented the largest size of box which should be employed from the viewpoint of gas distribution, gas overheating and lost capacity. When employed in a set of four such boxes, each containing a total of 4 ft. depth of oxide, and rated for 20 space-volumes per hour, this corresponded with a maximum gas capacity of 2.5 million cu.ft. per day per purifier stream.

Dr. Griffith had given three reasons for not exceeding these data. The objection on the ground of gas distribution surely could be overcome: e.g., in a box 36 ft. × 72 ft., by providing suitable ducts along the 72 ft. length, when distribution problems should not be increased. With such a box, would not the loss of radiation and convection surface from one end wall be less than that of the bottom surface of a ground level box?

Whilst he admitted the loss of capacity when changing a box, this could be mitigated by employing a five or six box stream with correspondingly higher 'R ratios'; but in any case surely the capital saving made it worth while.

As a result of these dicta, Dr. Griffith had given figures ranging from £170,000 to £240,000 for a 7.5 million cu.ft. per day purification plant, which must necessarily be in three separate streams. Most gas engineers and coking plant managers would be horrified at such a capital cost, which, including foundations, etc., should, in his own opinion, not exceed £120,000 for a single stream of elevated boxes of 7.5 million cu.ft. per day, especially if of mild steel construction. Single streams of such capacity and cost were by no means uncommon, and in these circumstances the cost compared

favourably with Dr. Griffith's implied figure of £220,000 for tower purifiers of this capacity.

Mr. L. T. Minchin said that if his recollection was correct, more than half of the H_2S from the crude coal gas went into the ammonia liquor. It ought to be possible to make use of the sulphur for national resources, if not for the economic prosperity of the distillers.

One was struck by the great difficulty of removing sulphur from coal, especially as coal was a rather tender molecule which could not be played about with too much for fear of altering some of its valuable properties; it could not be oxidised without altering its properties. He asked whether anyone had worked on the removal of sulphur from coke, which was less delicate, or had tried the effect of hydrolysis with high pressure steam, for example, on coke. Could any appreciable amount of sulphur be removed by such a process?

Dr. Griffith said that there were two points to which he could give quick answers.

The reply to Dr. Monkhouse, who asked how attractive to the gas industry was the possibility of extracting sulphur from spent oxide by the use of a solvent, was that at present sulphur prices the economic aspect was on a very sensitive balance. It was not a profitable process, nor would it be very costly, but it would depend on whether the residual material which was extracted could be re-used with purification. This was particularly important because of the growing tendency to use artificial mixtures, which would probably cost more than the natural mixtures. If they could be used twice or three times, it would make a big difference to the overall cost.

Dealing with Mr. Minchin's question about what happened to the H_2S, he said that it most certainly was not lost. It was one of the most valuable materials. It was used to make sulphuric acid in a contact plant, and because it was a particularly pure form of H_2S it gave a particularly valuable form of sulphuric acid.

Dr. Craxford asked Dr. Griffith, when making his written reply, to give more information about the costs of the oxide box process, dividing the costs into the different items of labour, power, and so on. In considering the capital charges, was it the old-fashioned oxide box process, or the modern Moignard oxide box working at a much bigger space velocity?

North Western Gas Consultative Council Inspects 'Rochdale' Process

At the invitation of the North Western Gas Board, members of the North Western Gas Consultative Council visited the Partington works of the Manchester undertaking recently to see the board's new 'Rochdale' process in full commercial operation. Before touring the plant, the party was entertained to luncheon at the works and heard Mr. William Hodkinson,

Mr. T. Biddulph Smith (right), Station Engineer at Partington, shows a party of Consultative Council members round the Works. The Council's Chairman, Alderman C. E. P. Stott, J.P., is second from the left.

the board's Chief Technical and Planning Officer, explain how the 'Rochdale' process, by injecting gas into the base of standard vertical retorts during carbonisation, doubled the productivity of the plant.

Mr. Hodkinson said that the process, an extension of a method patented some 30 years ago but never until now brought beyond the experimental stage, had been developed by the board as part of its campaign to reduce its operating costs materially by getting more work from existing gas-making plant. Led by the Council's Chairman, Alderman C. E. P. Stott, J.P., a part-time member of the board, the party saw how plant built to produce two million cu.ft. of gas per day is now regularly producing double that quantity at Partington, thanks to the revolutionary process developed by the board's technicians.

International Gas Union : Council Meeting at Dusseldorf

The Council of the International Gas Union met in Düsseldorf on September 27 and 28. The business sessions were presided over by Mr. M. Brabant, Hon. President of the International Gas Union, assisted by Mr. R. H. Touwaide, Secretary-General. The delegates of the national organisations of Austria, Belgium, Denmark, France, Germany, Great Britain, Italy, Netherlands, Saarland, Sweden and Switzerland were present, as well as Dr. W. T. K. Braunholtz and Mr. P. Mougin, Hon. General Secretaries. The American, Canadian, Japanese, Norwegian, and Spanish associations tendered their apologies for not being able to attend.

Dr. F. Gummert and Dipl. Ing. F. Steif, Presidents of the Arbeitsgemeinschaft des deutschen Gasfachs, welcomed the members of the Council, while Mr. M. Brabant expressed the pleasure he had in accepting the invitation to the Council to meet in Düsseldorf. The minutes of the February meeting in Vienna were approved.

Dipl. Ing. Hermann Müller, who was President of the Union from 1937 to 1940, was unanimously elected an Hon. President. Dott. Ing. Mario Boselli was elected a Vice-President in place of Professor Angelo Verga (resigned).

The Council unanimously approved the admission of the National Gas Association of Australia as a member of the International Gas Union. Progress reports were made of the work of the international committee for the development of gas utilisation, the committee on the fundamental tests for the approval of gas appliances, and the dictionary panel.

The Council examined the draft programme of the sixth International Gas Conference which is to be held in New York from September 26 to 30, 1955. The Secretary-General informed the Council of the position in regard to the national reports and individual papers to be presented at that conference. The question of the international exchange of young gas engineers was also considered, and it was agreed to obtain further information on the subject.

The Council was informed of the convening of the fifth World Power Conference in Vienna from June 16 to 23, 1956.

After the sessions, the members of the Council were received by Mr. J. Gockeln, Oberbürgermeister of the City of Düsseldorf and Landtagspräsident at the Landtag of Nordrhein-Westfalen, where they were entertained to luncheon. They also visited the Düsseldorf gasworks and the Glashütte Düsseldorf-Gerresheim, as well as a new vortex producer gas plant using powdered coal at Herten, near Recklinghausen.

Members of the Council were entertained to dinner by the Arbeitsgemeinschaft des deutschen Gasfachs.

Exports of refined petroleum products from the United Kingdom during the first nine months of this year amounted to approximately 6,000,000 tons and were valued at a record total of £64,710,000. This compares with £57,248,000 for the first nine months of 1953 and is actually well above the amount received for oil exports in the whole of 1952.

Nineteen new members, who during the past year qualified for membership of the "25 Year Club" of the Bryan Donkin Company, Limited, mechanical and gasworks plant engineers, of Chesterfield, bring membership to 185, of which 48 members have served over 40 years, 65 over 30 years, and the total length of service is 6,553 years.

Institution of Gas Engineers

Midland Section meets at Wolverhampton

A meeting of the Midland Section of the Institution of Gas Engineers was held at Wolverhampton on October 15 when a paper on 'Breeze Burning for Steam Raising' was read by Mr. C. H. G. Hayward, General Manager, Stoker Works, Edwin Danks & Co. (Oldbury) Ltd. The paper and discussion will be reported in a later issue of the JOURNAL. Following the morning meeting luncheon was taken at the Victoria Hotel at the invitation of Edwin Danks & Co. (Oldbury) Ltd. The Chairman of the Midland Section of the Institution (Mr. C. C. Wood) presided.

A token presentation was made to Mr. J. Corrigan (Divisional Sales and Service Manager, Leicester and Northants Division), who is now Senior Vice President of the Midland Section and was formerly Honorary Secretary for four years. He is succeeded by Mr. D. K. Green.

The CHAIRMAN paid a warm tribute to Mr. Corrigan's work and said it was greatly appreciated by members who readily responded when a subscription list was opened.

MR. CORRIGAN expressed his cordial thanks for the gesture on the part of members. He had chosen a radiogram from which he hoped to get much pleasure. He was Secretary during the period of transition and he desired to pay a sincere tribute for all the help and co-operation he received from the respective presidents of the period—Mr. Pearce, Mr. Tran, Mr. Wakeford, and Mr. Macnaughton. He appealed to members to support his successor and particularly by replying to the communications they received from him. From his own experience he could assure them that that was very important.

In proposing the toast of their hosts, Mr. Wood said they appreciated their valuable help in arranging that meeting and providing them with facilities to visit their two works, as well as the very acceptable lunch for which they stood as generous hosts. They had been most interested in Mr. Hayward's paper and were looking forward to seeing the firm's stoker and boiler works after what they had heard, especially as what they were to see was of importance to them all in carrying on their work in the gas industry. It was a matter of great regret that the Managing Director (Mr. J. Smith) had been taken ill and was unable to attend.

A group of Institution members in company with Mr. L. W. H. Rea (extreme left) viewing an Oldbury chain grate stoker.

MR. L. W. H. REA, Director and General Manager of the firm, in response said that all his colleagues would be gratified by the kind way in which the Midland Section Chairman had expressed appreciation of 'this attempt at hospitality which we have made, and by the large number who have been able to respond to the invitation.' Apologising for the absence of Mr. J. Smith, Mr. Rea said that he would be far better suited than himself to respond to the toast, since his colleague had many friends in the gas industry, with which he had been closely associated for over 35 years. However, Mr. Smith had passed on some notes to him, both serious and humorous, some of which he proceeded to read. In these notes reference was made to the new gas-fired stress-relieving furnace in which members of the gas industry would no doubt be specially interested. It was 56 ft. long by 15 ft. 3 in. high by 14 ft. wide, and used about 24,000 cu.ft. per hour to work up to approximately 6,000 to 8,000 cu.ft. to hold its stress-relieving or normalising temperature of 650 to 900°C.

Observing that the firm of Edwin Danks was now a big customer of the gas industry, Mr. Rea said that when this visit was proposed it occurred to him that the gas engineers had 'caught them out,' because the firm was now about half-way through its reconstruction scheme, and the works were perhaps not quite so ship-shape as they would like them to be for such a visit. However, he thought it would be interesting to them to see the transition from the traditional and sound methods of an old established firm of boiler makers to what he believed were the best pressure vessel shops in the Midlands, and probably in the country, with techniques which were up-to-date and which were progressively improved. He could claim that the firm had always been in the forefront with workmanship, and they were now installing buildings and equipment of the very latest design. In the last six years they had spent about £235,000 on the modernisation of the works. This had been partly forced upon them, due to the reluctance of young men to take up boiler making, which was hard and dirty work; there was also keen competition for labour from the light industries. Hence they were, by modernisation, simplifying and rationalising the manufacture of boilers and pressure vessels, and were making the best use of the latest and well-proved techniques. He could say that the installation of this new equipment had raised even higher their standard of product, and it had also enabled them to tackle difficult materials. Arising from these developments, there were

Left to right: Mr. A. R. Pegler, Mr. C. H. G. Hayward, and Mr. C. C. Wood, Midland Section Chairman.

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calls for an increase in technically qualified staff for research work and control of quality, and accordingly the technical aspect was being developed at the present time. In this connection he would like to pay tribute to his colleagues and the works management for the way in which they were entering into this scheme and introducing the new techniques required. Remarking that the firm's connection with the gas industry was substantial, Mr. Rea observed that much of it was indirect, as they worked very largely through very good friends who were closely associated with it, and he might mention that the general value of contracts performed for the gas industry in the last eight years was approximately £250,000, which was largely in association with Spencer-Bonecourt, for whom they had made over that period some 75 waste heat boilers, of which some 46 had been installed in gasworks in the United Kingdom. This work for the gas industry represented 3% to 5% of their output, which he considered very creditable considering their connection with other industries, such as oil, breweries, and many others. As regards the stoker business, he must pay tribute to Mr. Hayward, who was the main inspiration of this section of the firm's production. 'We were pioneers in this field, and now have a number of imitators, and the more closely they imitate the better is their machine,' said Mr. Rea. In conclusion Mr. Rea said it was a great pleasure to the firm to entertain the gas engineers and show them round the works.

Following the luncheon, visits were paid to the works of Edwin Danks & Co. (Oldbury), Ltd.—to the boiler works at Oldbury and to the stoker works at Woodside.

Yorkshire Juniors' Annual General Meeting

On Saturday, October 16, the Yorkshire Junior Gas Association met for its 51st annual general meeting at the headquarters of the North Eastern Gas Board, Bridge Street, Leeds. Mr. A. Cole (Spenborough), President of the Association, opened the meeting by welcoming Mr. H. Johnston, O.B.E. (Chairman, Manchester Association), Mr. S. C. Thomson (Director, Clayton Sons & Co., Ltd.), and others. After the usual proceedings Mr. S. C. Thomson presented the Clayton Gold Medal to Mr. C. H. Rickard (Leeds) for his paper entitled 'Works Practice,' after which Mr. J. C. Barwick (Director, Clapham Bros., Ltd.), presented the Clapham Silver Medal to Mr. A. W. Field (Sheffield), for his paper entitled 'Ourselves and Our Jobs.' Mr. Field also received the S.B.G.I. Silver Medal. The Firth Prize for the best short paper was presented by Mr. H. Firth to Mr. J. N. Walker (Huddersfield) for his paper on 'The Application of a Down-jet Coke Producer to a Series III Ideal Gas-fired Boiler.'

At this stage in the proceedings the retiring President handed his chain of office to Mr. D. C. Henderson, who thanked the members for the honour they had done him. He said that his intention, during his term of office, was to try and encourage the young members. He congratulated Mr. Cole on his successful year and Mr. Marshal, the Hon. Secretary on his continued good work. He said that their Jubilee year had been full of variety and interest, and then concluded by presenting Mr. Cole with a medallion in commemoration of his term of office. Mr. Cole replied briefly.

Mr. A. W. Field proposed a vote of thanks to the retiring President, officers, members of council and representatives.

At this point Mr. A. McDonald (Full time Member, N.E.G.B.) delivered an address entitled 'Tools,' extracts from which were given on page 258 *et sequi* of last week's issue of GAS JOURNAL. Mr. G. E. Banks (Senior Vice-President) then proposed a vote of thanks.

The result of the ballot for the election of officers for the year was then announced and there being no further business to discuss the meeting was closed.

General Managers' Dinner

The Duke of Rutland and Lord Balfour of Inchrye, will be among the guests of honour at the first annual dinner of the Institute of General Managers at the Savoy Hotel, London, on December 3. Their presence is particularly appropriate as the Institute is essentially a Commonwealth association of managing directors and general managers. The Duke of Rutland is President of the College of Industrial Management and Engineering and director of a number of companies. Lord Balfour, well known as a statesman and man of business, has done much to foster industry and commerce in the British Commonwealth and Empire. He is Chairman of the Empire Industries Association and past President of the Federation of Chambers of Commerce of the British Empire.

Chief executives wishing to attend the dinner, or to receive further information concerning the aims and objects of the Institute, should write to the Registrar, Institute of General Managers, 86, Eccleston Square, London, S.W.1.

The inaugural dinner was held in November, 1953. Speakers at functions held during the year included Sir Patrick Hannon, Sir Rupert De la Bere, A. G. B. Owen, W. Robson Brown, B. H. Leeson, Dr. R. S. Aitken, Vice-Chancellor of Birmingham University, the Lord Mayor of Birmingham and Wm. Blackwell, Vice-President, National Union of Manufacturers.

One of the basic concerns of the Institute is the education and training of the younger men, the potential general managers, who are making their way in industry and commerce and who are the future leaders of the nation's enterprise. The Institute, however, recognises that no amount of training and examination success by itself can make a competent general manager. The potential general manager must possess the attributes of personality and leadership which are necessary to the success and efficiency of any chief executive.

What Are You Worth?

A bowler-hatted figure with horns and pointed tail was introduced in a bright booklet, designed to be passed on to their employees, which reached several hundred industrialists on October 22. The object of *Are You Worth Your Weight in Gold?* a 12-page booklet published by Aims of Industry, Ltd., the industrial educational organisation, is to explain the function of capital in providing industry's tools and equipment. Drawings by Maroc show how much capital it takes to give a man a job in individual industries—and how taxation absorbs the profits which provide capital reserves.

'To give each employee his or her job may require equipment to the present-day value of anything up to £10,000—or even more,' says the booklet. It asks: 'Does it make sense when the Exchequer takes as much as 60% and frequently 70% of profits? It is not as if industry can say "We will put so much to reserve, and thereby keep away from the tax collector." All profits are taxed whatever the firm does with them.'

Examples of the amount of capital needed to give one worker a job in typical industries include (according to the booklet): bridge-building, £2,500; shoe making, £1,800; electrical manufacture, £800; brickmaking, £2,100; petroleum, £10,000; lace-making, £3,000; shipbuilding, £1,250; cement, £8,000; wool, £3,000; civil engineering, £1,000; chemicals, £2,680; sugar refining, £2,250; brewing, £1,240; diary-publishing, £1,000.

The Gasworks at Oakham, Rutland, is to be closed, some three months after the closing of the works at Uppingham, the only other town in the county, and in future supplies of gas will be obtained from Melton Mowbray, Leics. Mr. Walter Mason, Manager at Oakham, has been at the gasworks since 1917 and his father was manager for many years before he took over. Most of the buildings at the gasworks in Braunston Road will be demolished, including the chimney which has just been repaired after having been struck by lightning.

Wales and Monmouthshire Junior Gas Association at Manchester

Mr. J. Woodcock, President, Mr. H. J. Stanley, Secretary, and some twenty-five members of the North Wales Section of this Association visited the Salford gasworks of the North Western Gas Board and the Albion Ironworks of West's Gas Improvement Company, Manchester, on Tuesday, October 19.

At the West Egerton Street Works, Salford, they were received and welcomed by Mr. J. Wilson, General Manager of the Manchester Group, and by Mr. Olver, Production Engineer, and were shown over the works by Mr. Sharples and members of his staff. The main objects of interest were the two carbonising plants of intermittent and continuous vertical retorts.

The C.O.L. intermittent plant consists of 32 chambers of four tons carbonising capacity, of which 21 were installed in 1945 and 11 in 1951. They were making practically straight gas—*i.e.*, with nominal steaming, diluted with producer gas generated in static producers manufactured by the Power Gas Corporation, Ltd. Normally such plant would operate with 10½ hours carbonising period steaming at about the ninth hour. They are fired from pressurised step-grate producers feeding into a bus main. The recuperators are of relatively small capacity to leave plenty of heat in the waste gases for steam-raising in a Spencer Bonecourt waste-heat boiler, of which there are two, each capable of dealing with the whole of the waste gases, with the other as a standby.

The Glover-West continuous verticals are set in three separate benches each containing 24 50 in. retorts set in units of four with balanced-heating. Two of these benches were installed in 1951, the third in 1954; this installation has already been described in the technical Press. Among the interesting features are the mechanically operated coal valves, the sector dischargers (two of the benches operated by the reciprocating bar and one by the slave cylinders from Lockheed control), the arrangement of the coke extractors on a 'first floor' with the discharge on the ground floor, leaving the conveyor in full view and above ground, and above all the West hot-gas mechanical producers.

The extensive coal and coke-handling plants of the two installations are interlinked and the sequence starting and centralised control of operation excited a great deal of interest. It is to be hoped that this highly mechanised plant will some day be fully described in a comprehensive paper.

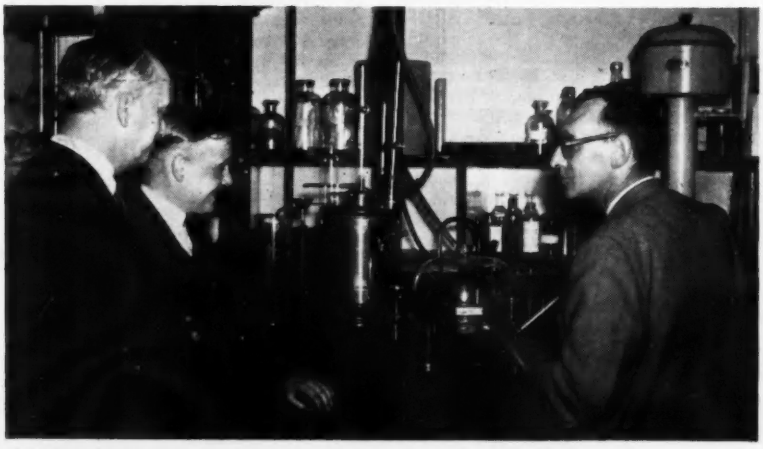
The company were entertained at lunch in the canteen at Albion Ironworks where they were received by Mr. John West. After lunch they were conducted round the works and offices by Mr. J. Hulme, Works Manager, Mr. M. S. Gaskill, Technical Director, and other members of the staff. Among the many objects of interest was a full scale selective screen conveyor over which samples of coke were passed and screened to demonstrate its efficiency.

In the early evening Mr. Gaskill presented a paper for discussion under the title 'Carbonisation—Present and Future'. Mr. Gaskill explained that his paper contained very little that was new It presented well-known statistics and facts with the object of opening a discussion. The statistics showed, among other things, the volume of gas purchased by the industry mainly from outside coke ovens from 1922-1952, a point of considerable interest to North Wales where developments indicate that very shortly most of the gas sold will come from the coke ovens at Shotton. Total installed gas-making capacity over the whole industry consists of 42.4% vertical retorts and 20.5% horizontal retorts, 1.8% coke ovens; of the balance 30.7% is water-gas largely used as a peak-load plant. The figures for carbonising plant in works of 5 million daily capacity and over are interseting, 28% horizontals, 59% continuous verticals, 9% intermittents and 4% coke ovens.

Mr. Gaskill discussed briefly the characteristics of the several types of plant particularly in relation to their capabilities of dealing with the coals available, methods of control of calorific value, heating systems and fuel requirements and coke produced. Other considerations were ground areas occupied, atmospheric pollution and urban amenities, labour costs and labour conditions, and capital cost.

With regard to the future, he thought that 'at any rate for some time to come

Mr. Hulme shows the President and Secretary a machine tool.



Mr. Gaskill shows the President and Secretary the calorimeters in the research laboratory.

the gas industry will be best served by conventional methods as the main proportion of its gas-making equipment.' The need for a national fuel policy was emphasised by such facts as that of carbonising coals from the Yorkshire and Durham coal-fields only 47% was supplied to the carbonising industries while 53% was used for direct combustion in industries and for domestic purposes where gas-making properties were of no significance.

The discussion was opened by the President who remarked upon the little that had been done by the gas industry in coal-blending. Indeed, few even of the largest gasworks had the space available for a thorough system of mixing on the scale, for instance, of what they had seen at their recent visit to the coke oven plant of John Summers and Sons, Ltd. Most of the speakers commented on the peculiar position of the industry in North Wales where coke-oven supplies supplemented to a by no means negligible extent by methane from the Point of Ayr colliery seemed likely to take over.

A vote of thanks to Mr. Gaskill for his paper, to Mr. John West and West's Gas Improvement Company and to the officials of the North Western Gas Board for their hospitality was moved by Mr. Briggs and seconded by Mr. Davies.

GAS IN TOY MANUFACTURE

Many commodities in a child's everyday life, like the toy train that whizzes round the nursery floor, the cuddly teddy-bear, the doll that 'ma-mas' when it is inverted, owe their very existence to the peculiar heating properties of gas. This is an aspect of industrial gas utilisation which has not been much publicised, but it should be noted that toy manufacturers in many parts of the country are gas users of considerable importance.

By far the largest consumer in this field is Messrs. Lines Bros., Ltd., whose factory at Merton was visited last week by representatives of the national and technical Press. The visit was organised by the Gas Council, and had as its object the better appreciation by the general public of how gas contributes to the toy manufacturing industry, and incidentally, to the happiness of children the world over.

Lines Bros. products include 'Triang' toys, 'Pedigree' dolls and baby-carriages, 'Frog' model aircraft, and 'Minic' road vehicles. It is interesting to note how the trade mark 'Triang' originated; the parent compay of the Lines Bros. Group was formed in 1919 by the three brothers, Mr. W. J. Lines, Mr. Walter Lines and Mr. A. E. Lines, and from the 'three lines' they arrived at the 'Triang.'

The rapid increase in the manufacture of toys at Merton can be measured by the rising gas consumption, which since 1939 has increased five-fold, from approximately 10 million cu.ft. per annum to 50 million cu.ft. per annum, equivalent to the annual domestic gas consumption of a small town. An increase of 20% on the present annual gas consumption has been scheduled for 1955. The following applications of gas at the Merton works are of special interest: rubber curing, die-casting, spring annealing, rust-proofing and degreasing, paint drying, and general workshop uses.

In the tube and welding shop, tubular components for pram chasses, tricycles and pedal cars are fabricated. Welding and brazing are carried out, and the various parts requiring sand-blasting are treated, after which a conveyor takes them through the various metal finishing processes. These comprise de-greasing, rust-proofing, washing and acid neutralising, by high pressure solution sprays, the solution being heated in gas-fired tanks beneath the spray tunnel. The conveyor passes through another tunnel, where parts are dried by hot air recirculated by a gas-fired heater. At this stage all the components leave this conveyor for paint-dipping, and then pass through a gas-heated conveyor oven for heat drying. Decorative linings and motifs are added, and a second conveyor passes them through another gas-heated oven to complete the drying process. There are installed three granodine solution tanks, one hot air drying tunnel-recirculated-conveyor, one conveyor stove drying oven.

In the die-casting shop, high quality zinc base die-castings for toys and prams are produced in three types of high pressure injection casting machines; each machine incorporates a gas-heated melting pot with thermostatic control. A conveyor carries the castings round the shop, past the work-benches and machines, where trimming, drilling, thread-cutting and tapping operations are carried out. A conveyor belt conducts all flash, swarf and rejects to a collecting point, whence they are transferred immediately to nearby melting pots and prepared for further use. Gas equipment installed in this department includes 12 melting pots on H.P. injection, and two scrap metal melting pots.

A 70 ft. conveyor oven and a 70 ft. P.V.C. oven are used for curing the various parts of the Pedigree 'Beauty Skin' rubber dolls, which are first formed on moulds.

An interesting sidelight is the rigorous testing to which all Lines Bros. prototypes are subjected before mass production takes place. In some instances, they invite children to 'do their worst' with, say, a tricycle for a few hours, and then their technicians go over the product inch by inch in an endeavour to make it even more sturdy and reliable. This is somewhat reminiscent of the exacting trials to which the ill-fated Comet aircraft have recently been subjected.

The showrooms are indeed a wonderful sight, and quite justify the company's immense pride in them. There is room after room of multi-coloured toys of every shape and size imaginable, from 'Minic' model cars, little more than 2 in. long, to the sleek pedal motor cars which may be driven by children of up to seven years. Some of these cars are fitted with horns, head-lights, wind-screen wipers, traffic indicators, even to reflectors—to conform with the latest traffic regulation! The police car, complete with siren, would bring joy to the heart of every little boy, and the roadster—similar to the one given to Prince Charles for Christmas—was indeed a magnificent specimen. For the little girls there are dolls by the hundred—many of them with permanently curled nylon hair, and attired in dresses designed by Veronica Lake. For the youngster who likes to copy mother, there is a miniature Bendix washing machine, and for the little boy who yearns to be an engine-driver—why, there is an engine which emits steam bubbles (of soap) as it chugs along! It is pleasant to think that, in the provision of happiness for millions of children, gas is playing an important part.

Better supply for Lothians

Nearly 114,000 consumers in East Lothian have benefited by the Scottish Gas Board's construction of an Edinburgh-based grid for the supply of gas to Edinburgh and the Lothians. Completed at the beginning of October, the existing trunk pipe has been extended to Musselburgh, and a pipe-line now links the Musselburgh works to the Prestonpans, Tranent, Port Seton, and Cockenzie area.

A new and larger gasholder with a capacity of 500,000 cu.ft. has been constructed at Prestonlinks to provide a local reserve of storage for the area. As a result, the manufacture of gas at the obsolete works at Prestonpans has been discontinued, and gas will in future be supplied from the Board's works at Granton and Musselburgh.

In addition to the provision of a bulk supply of gas from the Edinburgh-Musselburgh grid system, improvements have also been made in the local mains networks in Prestonpans and Tranent. As an outcome of these measures, gas consumers will receive a supply of gas of constant pressure and calorific value, the latter being raised to 450 B.Th.U. per cu.ft., the quality at present distributed to Edinburgh.

The Board is also making arrangements for improved representation in the districts of Prestonpans and Tranent so that service calls and enquiries will receive prompt attention. The development is another major step in the divisional grid scheme, planned shortly after the formation of the Gas Board. Already the small works at Loanhead has been closed, and, for the first time, gas has been supplied to the rapidly expanding community of Wallyford.

Other projects are in hand, and soon the small works at Rosewell will be shut down and a bulk supply of gas will be received by pipe-line from Loanhead.

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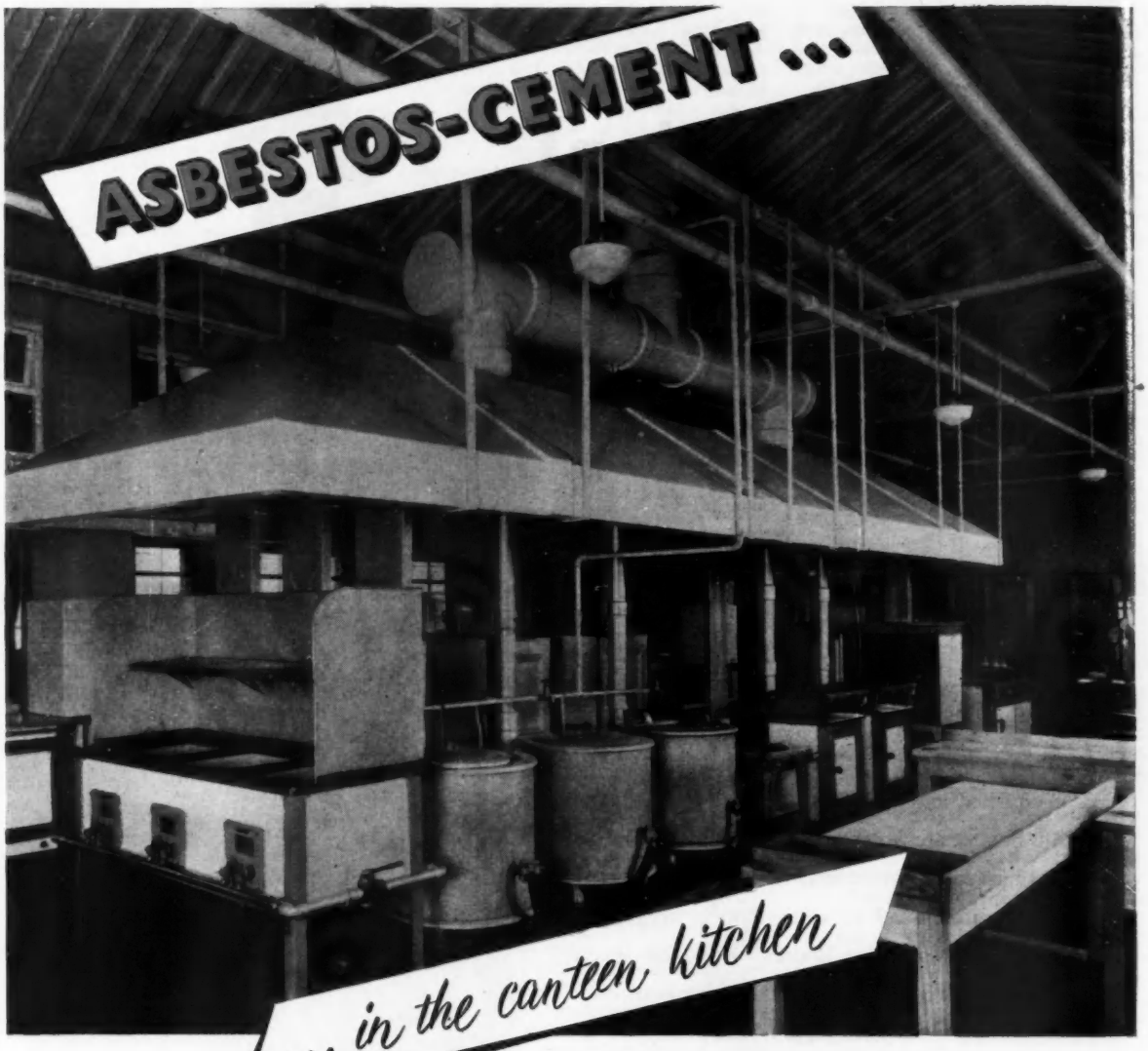

The above photograph illustrates the use of "Everite" Asbestos-Cement Flue Piping (Heavy Quality) and an "Everite" Asbestos-Cement canopy in a modern canteen kitchen.

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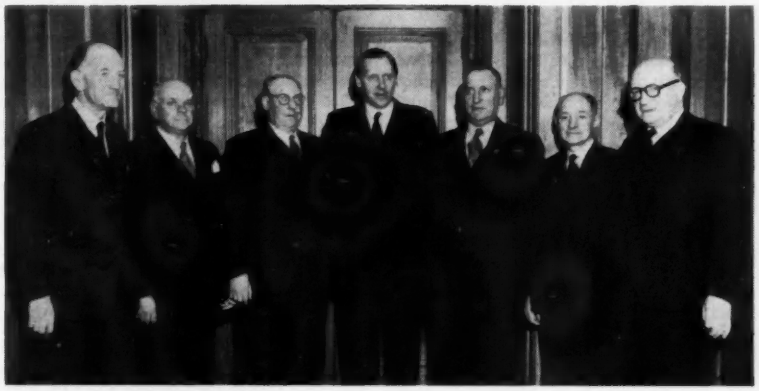
British Empire Medallists of the gas industry

On October 29 six members of the gas industry received British Empire Medals from the Rt. Hon. Geoffrey Lloyd, M.P., Minister of Fuel and Power, for long service to the industry. It is interesting to note that the six attending the presentation have an average of 44 years' service each and have, or had, many relatives in the industry. Those receiving medals were Mr. F. H. Fryer, Divisional Distribution Engineer to the Northern Gas Board, Mr. G. P. Clark, Distribution Foreman at the Brighouse works of the North Eastern Gas Board, Mr. H. Wallett, Assistant District Superintendent and Mains Superintendent with the West Midlands Gas Board, Mr. C. H. Walker, a joiner with the East Midlands Gas Board, Mr. H. A. Ridge, District Distribution Superintendent of the West Midlands Gas Board, and Mr. T. Gallacher, Yard Foreman with the Scottish Gas Board. Absent from the presentation on account of illness was the seventh medallist, Mr. J. E. Simmonds, who recently retired from the North Thames Board after 51 years' service.



The medallists with the Minister of Fuel and Power after the presentation. Left to right: F. H. Fryer, T. Gallacher, C. H. Walker, the Minister, H. Wallett, G. P. Clark, H. A. Ridge. Left: *Sir Harold and Lady Smith with the medallists and their wives and other guests at Gow's Restaurant.*

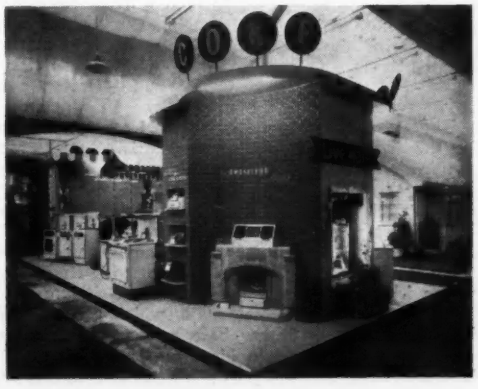
After the presentation ceremony the medallists and their relations and other guests were entertained by the Gas Council to a meal at Gow's Restaurant in London, followed by a visit to the Al Read show, 'You'll be Lucky' at the Adelphi Theatre. Sir Harold and Lady Smith joined the party at Gow's Restaurant and subsequently went with them to the theatre where all enjoyed a happy and memorable evening.

NORTHERN STAR LODGE GOLDEN JUBILEE

At its meeting in Manchester on Friday, October 29, the Northern Star Lodge celebrated the 50th anniversary of its consecration on November 4, 1904. The Worshipful Master, Mr. Reuben Crowther, was in the Chair. In 1904, at a meeting held in Manchester on March 11, it was decided to proceed with the formation of a Masonic Lodge mainly among the personnel of the gas industry in the North of England. The list of the 39 founders contains such names as Robert G. Shadbolt, William Prince, J. Wilson Broadhead, James Braddock, Stanislas Meunier, Thomas Duxbury, Luke B. Taylor, and Frederick J. West. The first Master was J. Niven with R. G. Shadbolt and S. R. Ogden, Wardens. Sir Frederick West, now in his 83rd year, is the sole surviving founder. He occupied the Chair in the year 1912.

Following the regular business of the Lodge and the ceremony on the agenda, the Lodge was visited by Mr. Frederick Towns, Assistant Provincial Grand Master for Lancashire (Eastern Division), and a number of Officers of Grand and Provincial Grand Lodge. Assuming the Chair, the Assistant Grand Master addressed a company which with visitors numbered about 130. He called upon the Secretary, Mr. Norman H. Duxbury, to read a short history of the Lodge. He then invested Mr. John F. West with the collar of a P.Prov.G.D. (Senior). To mark the occasion, Sir Frederick West presented the Lodge with a replica of the Coronation Bible for use in its ceremonies. The volume is bound in blue morocco, beautifully tooled and suitably inscribed in gold. Among the many visitors were Masters, officers and members of the Evening Star and Murdoch Lodges.

MIDLANDS IDEAL HOME



Some impression of the large and attractive stand produced by the West Midlands Gas Board for the Midlands Ideal Home Exhibition may be gained from our photograph. As usual the exhibition was held at Bingley Hall.

British Road Tar Association

Annual Meeting and Dinner

The annual dinner of the British Road Tar Association was held at Grosvenor House, Park Lane, on October 26, under the Presidency of Mr. W. K. Hutchison, C.B.E., Chairman of the South Eastern Gas Board and Senior Vice-President of the Institution of Gas Engineers. The dinner was preceded by the annual general meeting at which another very successful year's work was recorded.

It was stated in the annual report that a valuable outcome of the International Road Tar Conference in London last year, the first post-war meeting of its kind, was an agreement between the member countries for the regular exchange of technical information and literature. The B.R.T.A. collaborated with the British Standards Institution in the various definitions of tar and tarred materials which are contained in the Glossary of Highway Engineering Terms which was republished this year.

Certification Trade Mark

Mr. W. Kirby and Mr. S. W. A. Wikner continued their work as the joint accredited officers under the certification trade mark scheme. Early this year, to the Association's regret, Mr. Wikner was advised to take more rest. The Association has, however, been able to engage the services of Mr. T. W. Spicer, who retired last year from the Managership of one of the tar distilling works of the Midland Tar Distillers. Mr. Kirby and Mr. Spicer will continue as the accredited officers during the current season.

The total number of operative licences is 32, covering 66 works in all parts of Great Britain. The accredited officers again report a high order of efficiency in plant control, and that testing is well conducted.

The amount of certified tar sold in 1953 was 355,612 tons. This represented 84% of the total road tar sold in the home market during that year as compared with 79% in 1952.

A considerable number of road engineers in Ireland have been added to the *Road Tar* mailing list, and the journal now has a circulation of 5,800 per quarter as compared with 5,300 a year ago. The circulation has doubled since the journal was started six years ago. To provide more articles of general interest, the size of the journal has been increased.

Road Tar Manual

The *Road Tar Manual* has proved to be the most useful and comprehensive publication which the Association has issued for many years, and requests are constantly being received for it. It has been necessary to place some limits on its distribution as each copy has cost something over £2 to produce. Those to whom it cannot be sent free of charge have gladly paid the £2 12s. 6d. which is charged for it. It has been sent to each County Surveyor in Northern Ireland and Eire, and altogether 186 additional copies have been issued during the past year. The loose leaf additions which have been made to it include a revision of the technique of surface dressing with tar, Road Note No. 17 (which deals with the protection of subgrades and granular bases by surface dressing), notes on sampling tarmacadam, and the new booklet on dense tar surfacing which has taken the place of the two earlier publications on this subject.

Some six years ago the Association published a tarspraying indicator which found much favour among surveyors and their staffs who are responsible for surface dressing operations. Following the revision of Road Note No. 1 the indicator has been completely revised by Mr. G. F. Polglaze, of the South Western Tar Distillers, assisted by other members of the B.R.T.A. Technical Committee. It is hoped that the indicator, which is made of durable plastic material and the price of which will be comparatively low, will be available shortly.

The Association has also recently issued a guide to surface dressing with tar, which sets out simply the rates of spread of tar and chippings. It has been printed on glazed paper and has been widely distributed; by the end of the year under review, nearly 7,500 had been sent out as an initial distribution and in response to subsequent requests.

Altogether, apart from the quarterly journal, nearly 19,000 booklets and leaflets were distributed by the Association during the past 12 months.

A Record Attendance

There was a record attendance at the annual dinner, including the Chairman of the Gas Council (Sir Harold Smith), the Chairmen of eight area gas boards and the Deputy Chairman of one, and a number of visitors from the Continent.

MAJOR A. G. SAUNDERS, Vice-President, proposed the toast of the guests, and referred particularly to Sir John Maud, Permanent Secretary of the Ministry of Fuel and Power, to which Ministry the tar distilling industry was attached for rations and discipline, as it derived its raw material, crude tar, from coal through the carbonising industries. They were also honoured to have among their guests representatives of many Government Departments and scientific bodies and associations. There were guests from the Gas Council and the area gas boards, the National Coal Board, and many other organisations which were allied to their own industry, county and municipal engineers who used their product, and many friends interested in road tar and its use for industrial purposes. He offered a special welcome to guests from overseas—M. A. Rumpler (Directeur des Routes at Ministere des Travaux Publics, France); M. A. Cochery (France, President of the International Road Tar Conference); M. G. Coret (France, Chairman of the International Road Tar Conference); M. M. Depauw (Directeur Commercial Adjoint, Societe Houille, Goudrons et Derives, France); M. M. de la Crochais (Companie Maritime de Transport de Goudron); and M. F. Puech (Directeur General, Societe Chimique de Salzacre, Belgium).

SIR JOHN MAUD, K.C.B., C.B.E., Permanent Secretary, Ministry of Fuel and Power, responding said although the guests were a heterogeneous group there was a common bond between them—in fact if he might be allowed to use the word 'bind' the best bind of all, which made them all united in thanking not only their hosts but tar itself for all it did. They were all concerned with making straight the highway of national progress, and they were all united in praise of tar. Behind tar there was a curious substance called coal, which in the House of Commons the previous evening had been proved to be one of the best binds of all, inasmuch as it united both sides of the House in praise of that great industry from which the Road Tar Association derived so much. They must all be grateful that coal as well as tar had been found by politicians to be a subject on which they could all agree.

The Young Idea

MR. S. MEHEW, O.B.E., County Surveyor, Derbyshire County Council; Chairman, Pavings Committee, Road Research Board, proposed the toast of the Association. He referred to a competition which a friend of his—the Editor of an important paper—arranged for his old school. He offered a prize for the best essay on 'What I want to be.' One boy wrote: 'When I grow up I would like to be a road surveyor for I think there is a future in it. These men are well paid and the job is easy. I have always like watching them at work on the roads. I would go and apply for a course in road surveying so that I could learn all about it. After I had finished my course I would go and apply for a job. I would begin from the bottom and work my way up. When I was fully convinced that I knew all the tricks of the trade I would become professional. Thus I would make my fortune.'

From the point of view of the Pavings Committee of the Road Research Board he wished to pay tribute to the help given to that Committee by Mr. J. Davidson Pratt, their Chairman, and by Mr. Hitchcock. Both had been towers of strength to that Committee. The Association had done a lot for research, and certainly so far as tar was concerned virtue had been a good deal more than her own reward.

As surveyors they appreciated the ever present help given to them in their day-to-day work by the British Road Tar Association. They had their Technical Advisor, Mr. W. E. Cone, and their technical representatives, and it was to be observed with interest that they were

proposing to appoint a Scientific Officer. Their *Road Tar Manual* was a monumental work which cost more than £2 per copy to produce and was a magnificent production.

He expressed sincere feelings of admiration and respect for what the Association was doing. There was no doubt that from the point of view of the road builder and the road user they were doing a great job. They were helping the county and municipal engineers to maintain their very much over-worked roads very economically and they were, through the new techniques now being developed, prepared to make a very substantial contribution to the construction of the new and more adequate roads which he personally felt were essential to the economic life of this country and could not be much longer delayed.

Honorary Members

The PRESIDENT, in responding to the toast, said the Association had seven Honorary Members, of whom three were present—Sir Harold Smith, who was their senior Honorary Member, Mr. A. W. Smith, of Birmingham, and Mr. J. C. Mann, who carried his 87 years with great dignity and a merry twinkle. After 27 years of growing activity in which at times their membership had been patchy, the Association now stood representative of 95% of the total tar distilled in the country. It worked in the most harmonious way as between the two nationalised industries, coal and gas, together with those who produced steel and whose precise status they had to determine from time to time by close study of the financial pages of the Press. They had always had the full support, and he believed nearly 100% membership, of the independent distillers in this country. It was tardy recognition of virtue when first they made an honest man of a pure tar distiller and so amended their constitution as to enable Mr. Stanley Robinson to become the first such to hold the office of President. He (Mr. Hutchison) was honoured to be succeeding him in that office. They had for some time had close connections with the road tar industry in Northern Ireland, one member of which, Mr. Leivers, had served on the Council. The movement had spread and they were delighted that they had with them four members from Eire, among whom he would only mention Mr. Robertson, of the Alliance and Dublin Consumers' Gas Company, who had been nominated to take office on the Council of the Association.

He assured the members from Eire that they would do their best to serve the interests of road tar in Ireland, and they were arranging to increase their staff by appointing a representative who would have as his sole care that part of the world. It would be to their mutual advantage to have that direct link and so ensure that the results of research and development were applied as quickly as possible to the great task of making roads.

The past year had had its ups and downs, but he had been very encouraged to hear about the progress made in the new development of dense tar surfacing, and he wished those concerned all success in their efforts to further the use of that material. With so many members of Ministries and local authorities present, all responsible in some measure or other for the future of these annual dinners, it would not be polite or politic on his part to do too much advertising. He would just ask that if they saw the letters D.T.S. on the papers in their files they would connect them with the B.R.T.A. and not with that equally important association known as Alcoholics Anonymous.

Overcrowded Roads

The past week had been Motor Show week, as well they knew who lived in London and had to use the London streets. The air had been full of confident prophecies about the future of the motoring industry. According to one report 5,000 cars a day would come off the production line. Then the Chancellor of the Exchequer had foretold the possibility of doubling the standard of living in the next 25 years. So it seemed likely that a large number of the new cars would finish up on the roads of this country, presumably at the end of a long queue trying to get into or out of one of our larger towns, or merely proceeding in packed discomfort on our inadequate roads. If the worst came to the worst and nobody could find the money to build any new roads, at least we might look forward with confidence to a good deal of additional wear and tear, and they as an industry would be only too happy to play their part in the necessary repairs.

The Next I.R.T.C.

MR. J. DAVIDSON PRATT, C.B.E., Chairman of the Association, said they were very grateful to their guests, who were their friends who had helped them in many ways in the years that had passed. They looked forward to their help for many years ahead. He also endorsed what had been said about the visitors from France. Those who took part in the International Road Tar Conference last year would remember how well they were supported by their friends from across the Channel. The next International Conference, which he hoped they would all attend, was going to be held somewhere in France. Wherever it was they could be assured that it would be delightful and they would enjoy the French hospitality. They rejoiced in having with them M. Cochery, the new President, and M. Coret, the new Chairman, and they welcomed them very much indeed. They would look forward to meeting them again, together with M. Rumpler, whose work they knew so well.

WALKIE TALKIES FOR GASHOLDER INSPECTION

Tests have recently been carried out by Mr. L. C. Grant, a Liverpool consulting engineer to find out how walkie-talkies could be used for the inspection of gasholders. Subsequent to these tests he has ordered equipment and a report on its use has been made by a representative of Pye, Ltd., of Cambridge, who was present. The engineer required communications from inside gasholders for the purpose of maintenance, etc., and tests were carried out using the standard Pye battery-powered transportable, together with a standard walkie-talkie.

The transportable 'Reporter' was set up approximately 50 ft. away from the holder at ground level working on frequences of 85.875 Mc/s and 72.375 Mc/s. Tests were then made and two-way communication loud and clear was established to the walkie-talkie, working on similar frequencies to the transportable. At this stage a Gas Board engineer was fitted up with the walkie-talkie and made his way up the side of the holder, maintaining communication at intervals, loud and clear signals being received at all points up the side and on top of the holder. The engineer having descended to ground level a second series of tests was made.

The engineer entered the holder through a steel door into the airlock, which was then shut and secured, fully readable signals being obtained, loud and clear. During the progress of the engineer into the airlock, a running commentary was given on his actions and every syllable was fully readable. The engineer passed through the second door of the airlock into the holder proper, closing the door behind him and again maintaining fully readable signals with those outside. Various instructions were passed to the engineer, who was by this time established on a raft which was floating inside the holder, and the engineer was instructed to pole this raft to various positions in and around the interior of the holder. At all times fully readable full strength signals were obtained.

The gasholder used for these tests was under repair and was filled with compressed air, no breathing apparatus being needed. With such holders the practice, when repairs are necessary, is to pump compressed air into the holder to blow out all the gas, and it is quite safe to enter such holders without breathing apparatus, although there is the possibility of there being a slight amount of methane gas near water level.

Following these tests a second identical test was carried out at a later date, a tape recording being made of the speech at all times. Gas Board officials who were present are now considering the application of this method of communication in the North West.

Awards have been made to some 30 employees of the Audley Engineering Company, Limited, Newport (Salop), for over 25 years' service with the company.

Coal and Coke Traffic receipts of British Railways in the four weeks to October 10 totalled £9,581,000, an increase of £832,000 on the previous four weeks.

FLATS IN THE NORTH EAST

One of the blocks of flats in Kentner Avenue, Seacroft Estate, Leeds, under construction, showing the flue terminals.

A large number of single persons' flats are being built for the Leeds Corporation Housing Department. There are three blocks of flats under construction, as follows: King Loan Moortown Estate, 24 flats. (Contractors: Sims, Sons & Cook, Ltd.); Seacroft Estate, Kentner Avenue, 28 flats. (Contractors: Myton, Ltd.); Belle Isle Estate, 24 flats. (Contractors: N. B. Bell & Co., Ltd.). The architect is R. A. H. Livett, O.B.E., A.R.I.B.A.

Ascot Multipoint balanced flue heaters type 715 have been specified for these flats, one block of which is shown under construction. A further 24 flats have also been approved by the Corporation Housing Committee, and 715 heaters have again been specified, but as yet the contract has not been let.

Lunch Hour Demonstrations

The Northern Division of the Scottish Gas Board is launching a bold experiment by taking cookery demonstrations to the factories. This is believed to be the first such Scottish effort on these lines and is in keeping with the realisation that women who work during the day have little time to attend cooking demonstrations. Modern gas cookers will be taken to the various works canteens and demonstrations will be given during the period when the women relax after lunch. Most factories have now suitable halls or canteens where such demonstrations can be arranged, and most women workers would welcome the break provided.

In the half hour which the women will have to spare it is hoped to get three dishes cooked and circulated among the spectators. An added advantage of the scheme lies in the fact that many of the younger factory girls have less opportunity to learn to cook than they might have were they in other work; the demonstrations should therefore help not only the older but the younger women, and at the same time emphasise the services provided by gas.

An Agreement has been concluded between Powers-Samas Accounting Machines, Ltd., and Ferranti, Ltd., for collaboration in the development, production, and marketing of electronic data processing equipment.

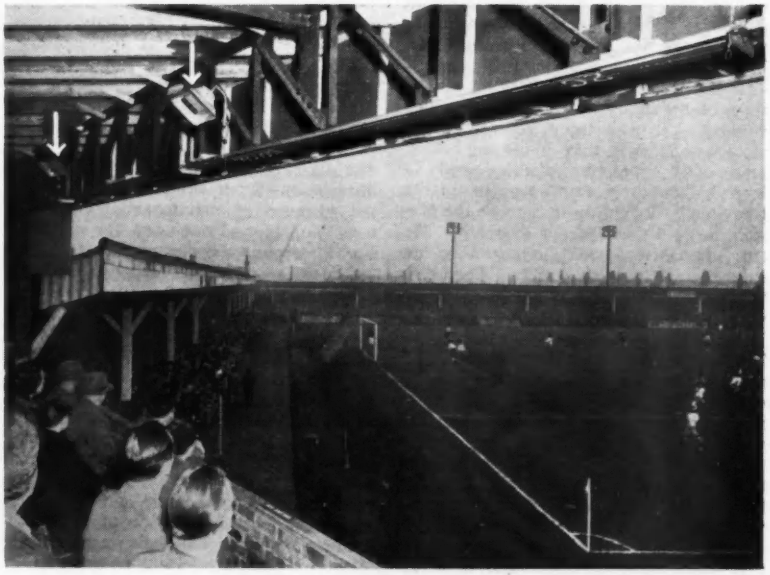
Cookery Demonstration for Blind Persons

The Scottish Gas Board, Paisley District, recently arranged a Cookery Demonstration in the showrooms, attended by a large number of members from the Paisley and Renfrewshire Mission to the Outdoor Blind. During the demonstration, which was given by Miss Jean McInnes, Home Service Adviser, Paisley District, the many safety features which are incorporated in the manufacture of gas appliances were explained and illustrated.

Special interest was shown by the members, when they had an opportunity to examine two of the special features —an oven thermostat with braille markings, and a cookery chart printed in braille, these having been made available by R. & A. Main, Ltd.

Mr. S. C. Cameron, one of the district teachers from the Mission, thanked the Board for arranging the demonstration. The members had shown, by their interest and their questions to Miss McInnes, how much this had been appreciated. He thanked the gas industry for co-operation in designing such features as would enable their members to make full use of gas cookers, with safety.

GAS WILL KEEP FOOTBALL FANS WARM



This picture, taken during the Football League match between Accrington Stanley and Grimsby Town, at Accrington's Peel Park ground, on October 16, illustrates a highly original development by the North Western Gas Board of industrial gas utilisation. Indicated by arrows in the top left-hand corner are two of an experimental installation devised by members of the East Lancashire Group's Industrial Gas Development Section, of three overhead radiant heaters which will help spectators watching football games in warmth even in the coldest weather. The heaters, which operate on the infra-red principle, are proving so successful and economic during this trial run that it is expected that the Accrington Stanley Board will order nine more for the ground's main stand and 37 for the foot stands where the heaters will add materially to the comfort of spectators at night-time floodlit matches in particular.

Intermediate Grades: Pay Rise

A statement issued by the National Joint Standing Committee for Intermediate Grades in the gas industry says that at a recent meeting of the Committee it was agreed that increases of £15 per annum or £20 per annum according to grade, shall be applied to all grades of pay for male intermediate grade employees in the gas industry. Eighty per cent. of these increases apply to the grades of pay for female intermediate grade employees. These increases take effect as from August 29 last.

Gas History in the South West

Mr. T. W. Clapham, Area Production Engineer, South Western Gas Board, was elected President of the Bristol Association of Engineers on October 19. The Association was formed over 60 years ago, and members are elected from well-known engineers in the Bristol district.

Mr. Clapham, in his Presidential Address, gave a resumé of the early days of the gas industry in the South West, and reference was made to the introduction of gas by William Murdoch at Redruth in Cornwall, and to the early work done on vertical retorts at Exeter by Settle and Padfield in 1902.

Mr. Clapham also made reference to the early commencement of the gas industry in Bristol in 1811, and to the work done by John Breillat, a Huguenot by descent and dyer by trade, who commenced the manufacture of gas there in 1811, and was later appointed the first Engineer and Manager of the Bristol Gas Light Company.

According to records, in the early days Breillat was classed as a man having unholy dealings with an infernal power, and public opiion was critical, and it was recorded that the Bristol Court of Aldermen at one time considered it their duty to withhold their permission for the erection of a gasholder because it would endanger the City gunpowder magazine.

Mr. Clapham referred to the overall position in the South Western Gas Board's area at the time of nationalisation, and by the aid of lantern slides was able to show the remarkable progress which the Board had made, not only in the erection of new manufacturing stations, but the work done in laying integration mains, and also the programme of work which had to be completed by 1960.

One special feature which Mr. Clapham was able to illustrate was the laying of the main under the Gloucester/Sharpness canal and along the three-quarters of a mile Railway Bridge crossing the River Severn.

Greenock Corporation has been advised by the General Purposes Committee to cease providing free gas and electric cookers and wash boilers in municipal houses. It is also proposed that corporation maintenance and repair of cookers and boilers should stop and that the Gas and Electricity Boards should be asked to do the work and charge the cost to tenants.

Gas Goes to Market

Appliance sales that compare more than favourably with results from orthodox showrooms of comparable size are being obtained by a market stall which has been set up by the North Western Gas Board in Birkenhead's Market Hall.

The stall, which is manned by only two attendants, has already sold gas appliances with a total cash sales value of more than £1,500 on the 11 market days during which it has been open for business: it is estimated that, if sales continue at their present rate, annual sales from the stall will amount to more than £22,000.

A section of the stall helps to draw the crowds by providing free washing facilities for shoppers, who are supplied with hot water, soap, and paper towels. The excellent business done by the stall is being achieved with a minimum of expenditure by the Board. The stall itself cost less than £150 to build, and the space it occupies in the Market Hall is available to the Board at a rental of only 32s. per week.

Diary

Nov. 5.—LONDON JUNIORS: 'Road Transport' and 'Sea Transport,' G.S. Caplin and L.O.V. Hayward. Edgware Road, London, W.2, 6.30 p.m.

Nov. 5.—MANCHESTER AND DISTRICT SECTION, I.G.E.: 'The Tingley Liquor Effluent Treatment Plant,' P. C. Egan, Chemical Engineering Assistant, North Eastern Gas Board; George Hotel, Huddersfield, 2.30 p.m.

Nov. 9.—WOMEN'S GAS FEDERATION. 'Domestic Heating and Smoke Abatement,' Dr. A. Parker; 'Hobbies,' Miss Jeanne Heal, Caxton Hall, 11 a.m. and 2.15 p.m.

Nov. 9.—MIDLAND JUNIORS: Report on Visit to France, J. A. Tomes, Staff Mess Room, Birmingham, 6.30 p.m.

Nov. 10.—LONDON AND COUNTIES COKE SALES CIRCLE: All day visit to Ipswich; film show in the morning; visit to Crane, Ltd., in the afternoon.

Nov. 11.—EASTERN JUNIORS: 'Scientific Management and the Gas Industry,' by R. Wells, and 'The Selection of Electric Motors for Driving Gas Compressors,' by D. F. Rudge. Demonstration Rooms, Eastern Gas Board, Spalding. 2.15 p.m.

Nov. 12.—SCOTTISH JUNIORS (WESTERN DISTRICT): 'The Fairweather,' G. Campbell and R. Rae. 522, Sauchiehall Street, Glasgow, C.2. 6 p.m.

Nov. 15.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, London, W.C.2. 2 p.m.

Nov. 15.—WEST MIDLANDS G.C.C.: Gas Offices, Edmund Street, Birmingham, 3. 2.30 p.m.

Nov. 15-20.—PUBLIC WORKS AND MUNICIPAL SERVICES CONGRESS AND EXHIBITION. Olympia.

Nov. 16.—LONDON AND SOUTHERN SECTION, I.G.E.: Meeting *cancelled*.

Nov. 18.—LONDON JUNIORS: Afternoon visit to Ford Motor Co., Dagenham.

Nov. 20.—MANCHESTER JUNIORS: Joint visit to Bradford Road Works with Yorkshire Juniors. 'Concentrated Ammonicial Liquor Plant Operation,' D. Astbury.

Nov. 21.—EASTERN G.C.C.: Connaught Rooms, Westminster, 2 p.m.

Nov. 22-23.—INSTITUTION OF GAS ENGINEERS: Autumn Research Meeting, Church House, Westminster.

Nov. 25.—MIDLAND JUNIORS: Visit to works of John Thompson, Ltd., Wolverhampton.

Nov. 25.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2. 2.30 p.m.

Calendar & Directory

ALTERATIONS

PREPARATIONS are well under way for the publication next month of the 1955 edition of the GAS JOURNAL CALENDAR AND DIRECTORY, in which the many alterations noted in the first issue of the JOURNAL in each of the past ten months will be incorporated. To enable readers to keep their copies of the current issue up to date, however, we continue our usual practice of recording the changes notified in the past month. Appropriate adjustments relating to these changes should, of course, be made in the 'Personnel' Section of the DIRECTORY, pp. 138-150.

Page 29.—RIDDINGS: Delete R. J. Ely, *M.*, retired.

Pages 117 and 119.—NORTH STAFFORDSHIRE DIVISION: Delete I. Greenwood, *Sales and Service Officer*, deceased.

Page 119.—KIDSGROVE: Delete R. Beech, *E.M. and S.*, retired.

Page 127.—HADDINGTON: J. S. Cornock, *M.*, vice E. H. Jones.

Page 136.—MUIRKIRK: Alex Hastings, *M.*, vice J. S. Cornock, transferred to Haddington.

Page 180.—SOUTH WESTERN SECTION, INSTITUTION OF GAS ENGINEERS: *Chairman*, W. B. Claridge (Swindon); *Senior Vice-Chairman*, J. W. Dean (Plymouth and North Cornwall); *Junior Vice-Chairman*, T. L. Tallentire (Cheltenham).

TRADE NEWS

Metal, wood and stone protection

Serviron is claimed to be a unique material combining the qualities of protective coating, a penetrating lubricant and a moisture resisting medium. It is not a paint nor is it an oil, but is a protector for metal, wood or stone. The material is a tested and proved product used for many years by well known shipping lines, on big industrial plants and by a large number of installations of all kinds.

One attractive feature is its ability to remain in a permanently plastic state unaffected by abnormal changes in temperature. Because Serviron remains in this soft viscous condition indefinitely it is valuable as a lubricant.

Recently there has been an important development in the production of a new type of Serviron known as Dampcoat. This enables Serviron in the form of Dampcoat to be applied as a corrosion preventive to damp or sweating metal surfaces and even on metal submerged in water. Other than this ability there is no basic difference in the action of the two products.—*Xzit (G.B.), Ltd., 175, Piccadilly, London, W.1.*

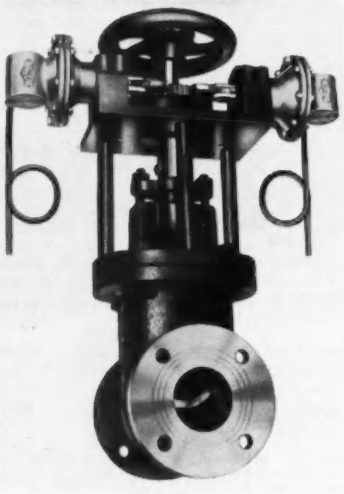
The remote control of valves

The Telektron-Hard system has been designed to meet the need in the industry for simple and universal remote control of valves. The system is operated by compressed air and remains unaffected by changes in surrounding temperatures and pressures. The units are available in standard two-motor and four-motor sets, incorporating either a standard or a double-power tandem motor.

The accompanying illustration shows a typical example of a two-motor unit. The motor set, mounted on an adaptor bracket, is fitted to the valve body, and the toothwheel is fixed on the valve shaft or the spindle. The handwheel is then fitted above the toothwheel for manual operation. The air supply is piped to the central connection on the control switch via an oil mist lubricator. Each air motor is supplied by a line from a port on either side of the control switch.

At the moment when the control switch is moved to the 'open' position, air is fed to the appropriate motor which commences to work in a series of short strokes, rotating the toothwheel in the desired direction by means of the ratchet and teeth. When the control switch is replaced to the central 'off' position, the air in the line is bled off through the control switch, and the operating arm returns 'home' and lifts the ratchet off the toothwheel ready for manual or reverse operation.

Among the advantages claimed for the Telektron-Hard system are that it provides accurate remote control for the operation of valves to any position from fully open to closed, but still leaves the valve free for immediate manual operation when required; that no maintenance



is necessary apart from periodic refilling of the oil mist lubricator; and that pneumatic operation ensures a flameproof unit and provides simplicity of installation. The standard unit has been designed for fitting *in situ* to standard valves. Alternative brackets and fittings are available or can be manufactured for special valves and other applications.—*Telektron (Great Britain) Ltd., 7, Chesterfield Gardens, Curzon Street, London, W.1.*

Acid-resisting cement

Claiming exceptional properties and consistently high quality, the makers of Sankey's Super Acid-Resisting Cement have issued a new descriptive leaflet. The cement is chiefly employed for the bedding and jointing of vitrified bricks and tiles in the construction of acid-resisting floors, walls and tanks. It is also used extensively for jointing pipes carrying acids and acid fumes. After the cement has set, a simple treatment also makes the cement water-resisting. The cement should not be used as a rendering, nor can it be employed for making concrete. Further, it is not recommended for use where alkalies come into contact with it.—*J. H. Sankey and Son, Ltd., Refractories Works, Ilford, Essex.*

An antiseptic hand cleanser

The need for a good hand cleanser is in few places more apparent than in the gasworks and in any works where skin infection is a danger. Saroul—a liquid solvent cleanser—has many uses, claim its manufacturers, but its main function is as a hand cleanser and safeguard against skin disease. It is emulsifiable in water and contains hydrocarbon solvents, medicinal paraffin oil, antiseptic agents, and a high proportion of sulphonated castor oil. It is applied normally by rubbing into the dry skin and then washing off with water, when ingrained deposits of oil, grease, paint tar and general dirt are readily and completely removed. Saroul is in regular use in washrooms and surgeries of all Imperial Chemical Industry factories, in the Admiralty, Ford Motors, Ltd., and among other large and small organisations. It has been examined and approved by many doctors in Government, industrial and general practice. It has, say the makers, a most satisfactory record in the prevention and relief of occupational dermatitis. — *Sandeman Brothers, Ltd., 50, Bilsland Drive, Maryhill, Glasgow.*

Improving road tar properties

Armour & Co., Ltd., report that it has been found that by adding a small amount of one of their chemicals—Duomeen T—the properties of tar to stick to wet road stones are considerably improved. Roads, they claim, can often be laid in a damp atmosphere, and on a rainy day if the tar contains Doumeen T. Roads laid abroad and in this country with tar containing the Company's anti-stripping agents have given satisfaction. Tar containing Duomeen T can also be used with advantage in other fields—*i.e.*, in water proofing solutions, roofing felt, flat roofs, etc. There the action of Duomeen T is twofold; it causes tar to stick better to the material treated, even if it is dripping wet, and it prolongs the life of the tar as it has definite anti-ageing properties. Another important field of activity is the application of Duomeen TDO in primer paints; the advantage of adding as little as 1% to read lead or red iron oxide paint is such that a paint can then be brushed on a wet gasholder, bridge, or other surface. Some of the products of the Armour Chemical Division are bactericides; others have strong anti-corrosion properties. Their use, for instance, is to keep down the growth of algae in cooling water. Apart from acting as anti-corrosives they prevent sludge particles from depositing in condenser tubes, boilers, pumps, etc.—*Chemical Division, Armour & Co., Ltd., Lindsey Street, E.C.1.*

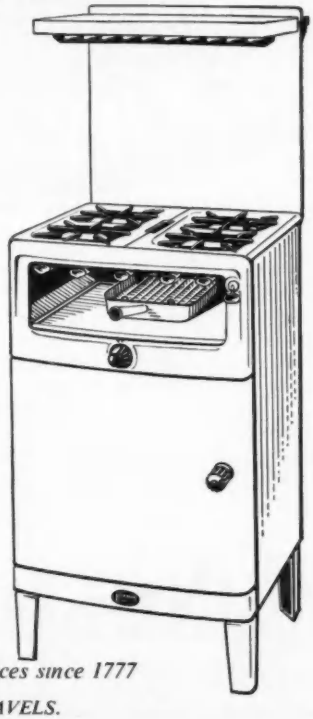
Solderless wiring connections

To overcome the disadvantages inherent in normal soldering of joints, the Plessey Co., Ltd., has pioneered and developed the principle of a solderless wiring connection. This ensures a reliable joint regardless of the skill of the operator, and eliminates troubles due to heat and the corrosive action of fluxes. There are two types of solderless crimp—indentation and hexagon. In the indentation type the solderless wiring connection is made by manually crimping opposite sides of the connection tag so that the wire connector is gripped im-

Putting gas to good use...

In 1784 (seven years after Flavels commenced business) Vincent Leonardi used a gas to make the first balloon ascent in Britain.

Today the best and most economical domestic use of gas is made by the Flavel '68'—the medium priced bow-fronted cooker, that sells as fast as the hot cakes it bakes.



The **FLAVEL '68'**

FLAVELS *of* **LEAMINGTON**

Makers of fine cooking and heating appliances since 1777

Telephones: Leamington 100 (Head Office) 3091/2 (Sales). Telegrams: FLAVELS.

As the champion hurdler's faultless performance and flawless appearance delight her critical spectators, so the faultless performance and flawless appearance of the Century Cooker delight the critical housewife . . . as the champion's perfect hurdling is the result of years of training and practice so the Century is the result of R. & A. Main's years of experiment and research.

Always to the forefront in improving the efficiency of the gas cooker, R. & A. Main Ltd. have been "first in the field" with many outstanding features . . . in 1922 Main introduced the simplified form of cooker construction . . . in 1927 Main were first with an all-enamelled cooker . . . and in 1935 Main introduced the first all-sheet metal cooker.

The No. 20 Cooker was the first chassis-less model to be produced and marketed in Britain, and it was also the first cooker to incorporate an oven-flue vent discharging in front of the backplate. The high efficiency and popularity of the Century has indeed proved the worth of Main's years of constant research.

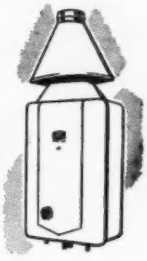
MAIN No. 20 CENTURY GAS COOKER

C1

Note the name-made by MAIN

R. & A. MAIN LIMITED
LONDON and FALKIRK

there is a MAIN water heater for every domestic purpose . . .



instantaneous for a complete household service . . . the M.I. Multipoint

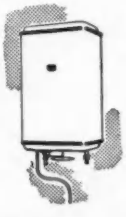
instantaneous for the bath . . . the New Junior

instantaneous or storage

for a complete household service . . . the G.L.C. Circulator

storage for a complete household service . . . the Thermain No. 15

storage for the sink or lavatory basin . . . the Thermain No. 2



MAIN WATER HEATERS Ltd.
Gothic Works, Thornton Rd., Croydon, Surrey
W13

Solo for Sousaphone

The sousaphone's reverberating grunts and thumps are due more to the chromatic scale than to chronic indigestion. Muscular musicians frequently blench at the sight of one in a band or orchestra, appalled at the thought of what it would do to *L'Apres-Midi d'un Faune*. The sousaphone is, in short, not a faun's—nor even an engineer's—cup of tea. Engineers prefer a length of tubing, or hose, that goes about its job rather more quietly and efficiently like Dunlop Hose. Engineers who wish to have their afternoons (and mornings) free from the worry of hose problems should write for the illustrated brochure and technical assistance that are freely available from the Dunlop Rubber Co. Ltd. (General Rubber Goods Division), Cambridge Street, Manchester 1. Telephone: CENtral 2131.

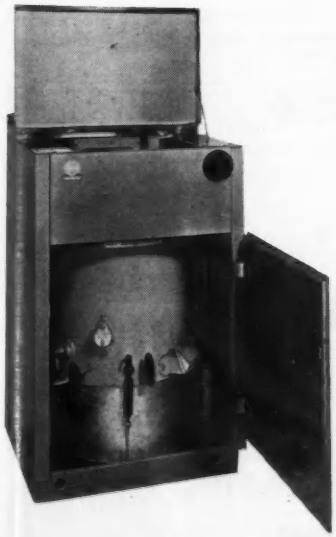
DUNLOP

HOSE FOR INDUSTRY

mova ly. The second type, the hexagon, is a l ter development and was designed to ta e any size of wire for crimping and i also suitable for use with aluminium cables, which cannot be soldered. To p epare connection the cable end is bared and inserted into a metal sleeve. In th case of the indentation crimp, a specia hand-operated tool is used to perform he crimping operation by producing u iform indentations which swage but d not crush the connector sleeves. The d es used are interchangeable. They are ca efully designed and mate accurately to revent any uneven pressure on the periph ery of the connector. For the hexag n type of crimp, either a hand-operated crimping tool (for light cables) or f ot-operated hydraulic tool (for heavi r cables) is used. This latter tool is sufficiently powerful to make joints with copper cables carrying up to 280 amps and aluminium cables carrying up to 20 amps. To make these connections, the aluminium cable is suitably treated with an oxide inhibitor before crimping. The Plessey Company has produced cable terminations for both the indentation and hexagon crimp, and in the case of the latter the whole of the Pren and Prenal range of cables has been catered for. Development work on the hexagon type of crimp is being continued along many lines in association with industrial firms on all types of cable used in industry.—*The Plessey Co., Ltd., Ilford, Essex.*

Hurseal domestic boiler

We illustrate here the Hurseal domestic boiler with its door open so that the deep ash pit which will hold a fortnight's accumulation of ash may be seen. This boiler, which is designed to harmonise with any kitchen equipment, has an efficiency on gas coke of 76% and this is believed by the makers to be the highest efficiency of any coke fired boiler in production.



It is exceptionally easy to control and has a temperature rise of 2°F. a minute. There is a space for casserole cooking within the hopper lid. It has a stainless steel top which acts as a warm servery and if the boiler is used with a back outlet, the top of the damper box can be used as a simmering plate.—*Hurseal Ltd., 229, Regent Street, London, W.1.*

'Slagbestos' mineral wool

Slagbestos mineral wool is a high-efficiency fireproof insulant which is manufactured in a number of forms, such as felted slabs, mattresses, blankets and pipe covering sections. Each of these, say the makers, satisfies the exacting demands made by engineers and architects in the fields of thermal and sound insulation and acoustic treatment. Whether in new or existing plant and buildings, there is a form of Slagbestos mineral wool designed to provide the maximum reduction in heat loss or sound transmission, and to ensure the optimum acoustic conditions.

A primary advantage is that the material is impervious to fire, vermin and decay. Not only does it prevent heat loss and the penetration of sound, but it constitutes an actual barrier against fire. The insulant is processed from a mixture of slags and naturally occurring rocks, melted and blended at a temperature in the region of 3,000°F. While still in the molten state, the minerals are converted into a light, fluffy mass of fibres, the diameter of which is approximately 1/15th that of a human hair. During their formation a special water-repellent can be introduced which ensures adequate protection against the risk of condensation encountered in low-temperature installations. Additional features of Slagbestos mineral wool are its chemical inertness and hence completely non-corrosive character; its resistance to ducting and settlement; and its clean handling qualities.—*F. McNeill and Co., Ltd., 10, Lower Grosvenor Place, London, S.W.1.*

Trade Publications

For the potential apprentice

With conscription there is a strong deterrent for the potential employer to engage school-leaving boys as apprentices. A youth half-way through his training may decide to get his National Service over with; a man leaving the forces, having completed his training before conscription, may decide to go somewhere other than to his previous employer. Dewrance and Company, Ltd., Engineers, Great Dover Street, London, S.E.1, are not deterred. They have been issuing, since 1946 their brochure 'An Engineering Career.' Based upon the Company's experience of trading and manufacturing over 100 years, it has set out a course of basic training for the post-war youth who wishes to make engineering a career. The brochure will be of great interest to parents of such young people.

Babcock steam

Three years ago, Babcock and Wilcox, Ltd., issued a brochure, and now that has been outdated by *Babcock Steam* an informative production which deserves to be called something better than a 'brochure.' 'The capacity of Babcock boilers installed and on order has reached a total of approximately 4 bill. lb. of steam per hour,' is just about the opening remark of the booklet, 'this huge total is an indication of the outstanding importance of Babcock steam raising plant to the world's economy, in the fields of both power generation and industry, for it serves both in equal measure.' 'Babcock Steam' then goes on to describe how the firm does literally serve the world embracing everything required for reliable, economical production of steam, on a large or small scale and up to the highest temperatures and pressures. Illustrated with taste, 'Babcock Steam' is a catalogue of achievement, presented with modesty.

'600' Machinery catalogues

When the first post-war edition of the comprehensive machinery catalogue of George Cohen, Sons and Co., Ltd. was issued last year, it was anticipated that a revised edition would follow shortly. But stock and market conditions underwent considerable changes and it was seen that mere revision would be impossible: a completely new edition would have to be prepared, based on stocks and prices adjusted to meet the new conditions. This second edition has now been distributed. It is fully as comprehensive as the first edition and in the wide range of items listed reflects the position of the company as the holders of the country's largest stocks of plant and machinery of all kinds, both new and secondhand.

The Fisholow magazine

The *Fisholow* magazine, published by Fisher and Ludlow Ltd., materials handling division, is claimed to be devoted 'to the interests of industrial production in general and to the development of materials handling in particular.' The magazine is bright and newsy; it has a strong leader column and articles on a wide range of subjects including American productivity, component handling, presenting a report, and Admiralty storage. Of particular interest in this issue is a report of a fire sustained at Fisher and Ludlow's plant on the 100-acre site at Castle Bromwich on August 29. This is very good journalism.

AMAL

Calibrated Jets & Injectors

to meet a specification of consumption

AMAL LTD., HOLDFORD ROAD, WITTON, BIRMINGHAM, 6

EWART CHAINBELT CO., LTD.

DERBY, ENGLAND

Driving and Conveyor Chains of the best quality; made of Ley's Celebrated Blackheart Malleable Iron.

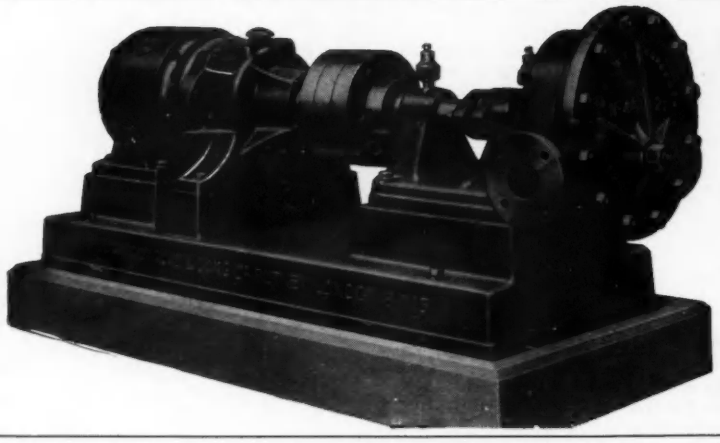
ALSO COMPLETE CONVEYORS AND ELEVATORS

CASES FOR BINDING

Quarterly Volumes of the 'Gas Journal'

7/6 each, post free

Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.



"THE DOUGLAS PUMP"

STEAM HEATED FOR TARS.

GOOD SUCTION SLOW SPEED

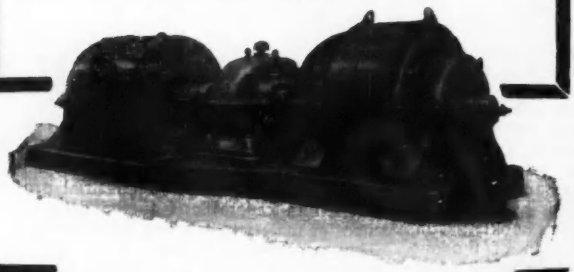
WILLIAM DOUGLAS & SONS LTD.

PUTNEY - - LONDON, S.W.15

TURBO-COMPRESSORS & EXHAUSTERS FOR AIR AND GAS

★ ★ ★

We build a complete range of Compressors & Exhausters for air and GAS, suitable for all purposes connected with the GAS industry, including Turbo-Compressors for large capacities, as illustrated below



WRITE FOR PAMPHLET No. 1018 GIVING PARTICULARS—

REAVELL & CO., LTD.,

RANELAGH WORKS, IPSWICH.

Telegrams: REAVELL, IPSWICH Telephone: 2124 & 5.

WELDING GUNNING SPRAYING OF GAS RETORTS

EB

Write for particulars of how E. B. Service can help in reducing maintenance costs. Manufacturers of all types of Cements.

E. B. REFRACTORY CEMENT CO. LTD.

Oakfield Offices, Brettell Lane, Stourbridge

CRANE

VALVES for Gas, Steam, Water, Oil and Air

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire:—52/- per annum; Foreign:—60/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words)—minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10 in. deep × 7 in. wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30. *Telephone:* Kings Norton 3868

NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN REPRESENTATIVE: A. Engelhardt, 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Central 2236-7

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. *Telegrams:* Gasking, Fleet, London.

MANUAL OF GAS FITTING

by R. N. Le Fevre

Temporarily out of print

A reprint of this most popular text book, incorporating numerous modifications and additions by the author, is in hand and we anticipate copies will be available by the end of the year.

Orders received are being listed, and will be executed in strict rotation.

WALTER KING, LTD., 11, BOLT COURT, FLEET STREET, LONDON, E.C.4.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright. Highest prices paid for Spent Oxide

Send your enquiries to

S PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

...grams: ...rification, Stock, London." Telephone: London Wall 5377

DEAR MR. NU-SWIFT,

Of course, we've some fire extinguishers, but are they up-to-date? Please ask your man to call and check them—ahead of that Fire Fiend!

Name.....

Address.....

MAIL NOW to Nu-Swift Ltd., Elland, Yorks.

"KLEENOFF" *

THE COOKER CLEANER

"KLEENOFF"

FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *

KETTLE DESCALER

For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.

7, CROMPTON WAY, CRAWLEY, SUSSEX

PUBLICATIONS

GAS ACCOUNT CALCULATORS

SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN, LTD., Calculator Specialists, 354, WHEELER STREET, BIRMINGHAM.

'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

PLANT, &c., WANTED

RELIABLE and sound condition used Connersville type Exhauster approximately thirty thousand per hour. Details to Engineer and Manager, Borough of Lurgan, Gas Dept., Lurgan, Northern Ireland.

WANTED

ALWAYS BUYING Scrap Mercury and all grades precious and non-ferrous scrap metals, any form: keenest prices. Let us quote. Belgrave Buyers (G.J.) 5, Belgrave Gardens, London, N.W.8. MAI 7513.

REPAIR WORK

INSTRUMENT Time Switch and Recorder Repairs and Supply. Wren, 10A Erith Road, Bexleyheath, Kent. Ring: BEX 2769.

THE BRITISH GAS PURIFYING MATERIALS CO., LTD.

NATURAL BRITISH.

BOG (DUTCH and DANISH) ORE.

SPENT OXIDE.

LONDON ROAD, LEICESTER.

Telegrams: "BRIPURIMAT"
Telephone: 59086

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

NATIONAL COAL BOARD, East Midlands Division, invite applications for the post of COKE OVEN MANAGER at the new Avenue Carbonisation and Chemical Plant near Chesterfield.

Applicants must have first-rate qualifications and experience of large modern coking plant. The Avenue works is a self-contained installation and will have a throughput of 2,000 tons a day. It comprises complete coal blending plant, power generation and secondary chemical plant and calls for the highest standards of management.

Salary according to qualifications and experience. Applications should reach the Secretary, National Coal Board, East Midlands Division, Sherwood Lodge, Arnold, nr. Nottingham, within fourteen days of the publication of this notice. Mark envelopes " S.V.358."

WALES GAS BOARD

HAVERFORDWEST UNDERTAKING
WORKING FOREMAN/GAS FITTER

APPLICATIONS are invited for the position of WORKING FOREMAN/GAS FITTER at the above Undertaking.

Applicants should have good Distribution experience and organising ability and must be first class Gas Fitters. Possession of the Full Technological Certificate in Gas Fitting will be regarded as an additional qualification.

Ability to drive a motor vehicle will be an advantage.

Salary in accordance with Grade A.P.T. III, Provincial "B" commencing within the range of £445 to £490 per annum.

The successful candidate will be required to pass a medical examination and subscribe to the Board's Superannuation Scheme.

Applications stating age and experience together with the names of two referees, to be forwarded to the undersigned by November 22, 1954.

A. L. THOMAS, A.M.INST. GAS E.,
Engineer and Manager.

Gas Offices,
12, Picton Place,
Haverfordwest.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT
DIVISION
TECHNICAL ASSISTANT—
WOLVERHAMPTON DISTRICT

CANDIDATES, who must possess as a minimum qualification the Ordinary Grade Certificate of the Institution of Gas Engineers (Manufacture), should have practical experience of the control and working of continuous vertical retorts and automatic C.W.G. plants.

The salary will be within Grade VI (£530-£610 per annum) of the Salary Scales of the National Joint Council for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. Stanley Jones, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

BIRMINGHAM & DISTRICT DIVISION
ASSISTANT ENGINEER—
BIRMINGHAM DISTRICT

THE DUTIES will entail full responsibility for the operation of large installations of carbonising and/or carburetted water gas plants under the jurisdiction of the Works Engineer or his Deputy at any one of the four Birmingham Gas Works.

Candidates should have had extensive experience in the operation of continuous vertical retorts and automatic carburetted water gas plants and in the control of staff and labour. Corporate membership of the Institution of Gas Engineers is an essential qualification.

The salary will be £925 × £50 to £1,025 per annum.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, training, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

NORTH WESTERN GAS BOARD

APPLICATIONS are invited from suitably qualified persons for the following pensionable appointments :—

MANCHESTER GROUP
GROUP INSTALLATIONS OFFICER

(Salary not less than £1,100 per annum)

The successful applicant will be responsible under the Group Sales and Service Officer for the organisation and control of the installation and maintenance of appliances and meters in the Domestic and Commercial Sections of the Sales and Service Division.

Candidates should be corporate members of the Institution of Gas Engineers, or hold a similar qualification and have had a wide experience in gas installation practice.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (Manchester Group), Town Hall, Manchester, 2, within fourteen days.

EAST LANCASHIRE GROUP
ASSISTANT ENGINEER (INDUSTRIAL GAS)

(Salary within Grade A.P.T. VIII—£625/£705 per annum)

Applicants should have a knowledge of the utilisation of gas and other fuels in industrial and commercial establishments, together with experience of the design, development and operation of industrial gas burning equipment.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (East Lancashire Group) Cardwell Place, Blackburn, within fourteen days.

LIVERPOOL GROUP
ANALYTICAL CHEMIST—
CENTRAL LABORATORY

(Salary within Grades A.P.T. VII/VIII—£585/£705 per annum)

Candidates should possess an appropriate university degree or be Associates of the Royal Institute of Chemistry. Some experience in an industrial laboratory is desirable.

Applications should be made on the official form obtainable from the Chief Personnel Officer, North Western Gas Board (Liverpool Group), Radiant House, Bold Street, Liverpool, 1, and returned to him within fourteen days.

NORTH WESTERN GAS BOARD

EAST LANCASHIRE GROUP
BLACKBURN UNDERTAKING

APPLICATIONS are invited for GAS FITTERS in the area of the above Undertaking.

Gas industry conditions of service and national rates of pay, which are currently as follows :—

First-class gas fitters ... 3s. 9½d. per hr.
Second-class gas fitters ... 3s. 6½d. per hr.

Applications, in writing, stating age and experience and giving names of previous and present employers should be sent to the General Manager, N.W. Gas Board (East Lancashire Group), Cardwell Place, Blackburn, to reach him within fourteen days.

EASTERN GAS BOARD

TOTTENHAM DIVISION
JUNIOR TECHNICAL ASSISTANT—
PONDERS END WORKS

APPLICATIONS are invited for the position of JUNIOR TECHNICAL ASSISTANT at Ponders End Works.

Candidates should be over the age of 25 years and should have had a good experience of Carbonisation.

The salary will be within Grade A.P.T. IV (Men) of the National Salary Scales for Gas Staffs.

The person appointed may be required to pass a Medical Examination and, unless already subject to the Pension Scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age and giving full particulars of experience and qualifications should be addressed to the Divisional Personnel Manager, Woodall House, 658 Lordship Lane, London, N.22, to arrive not later than Saturday, November 20, 1954.

MISCELLANEOUS

SMALL single truckloads and larger quantities of good ROUGH BREEZE from any gasworks large or small, in the United Kingdom required by merchants paying own railway tolls. Cash price and particulars to : No. 9378, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

DOMESTIC
UTILISATION OF GAS

SMITH & LE FEVRE

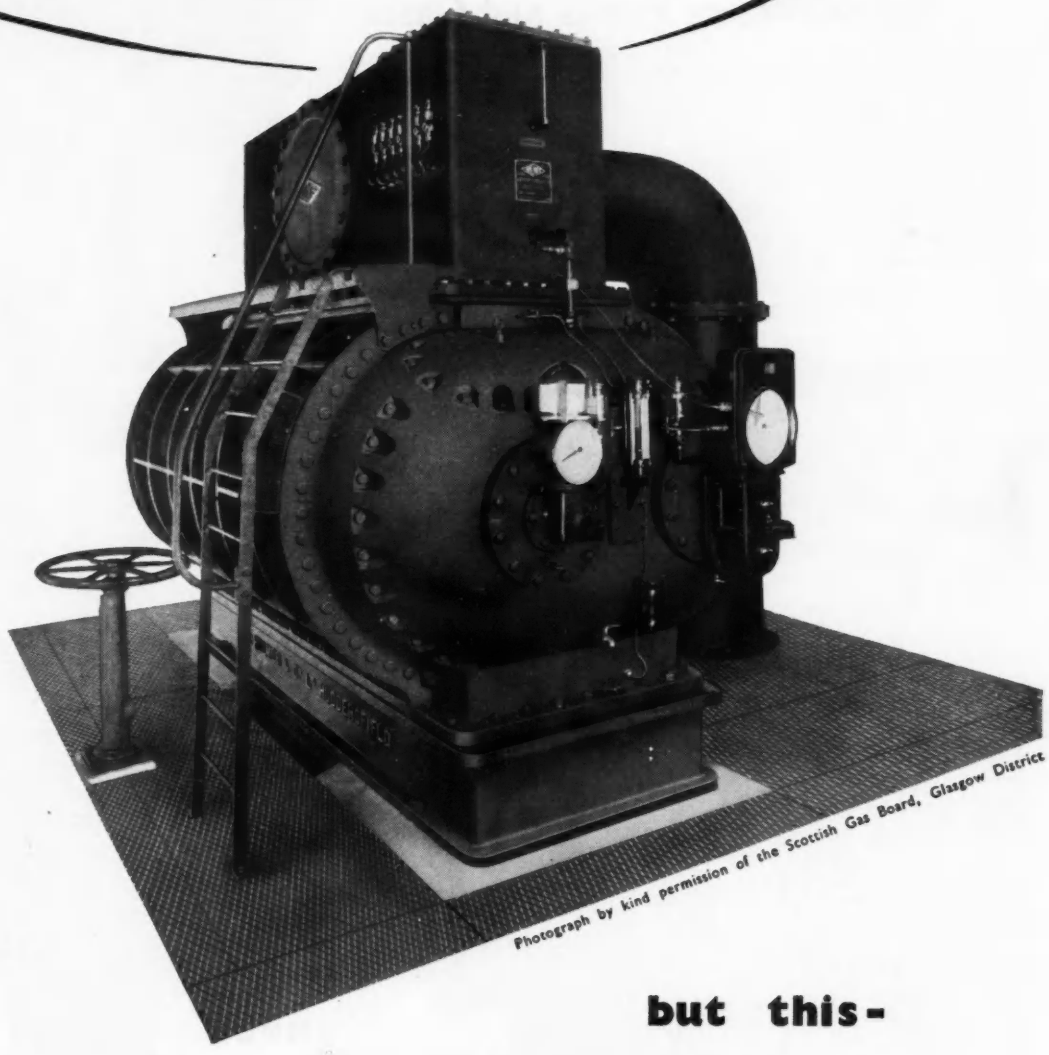
20/- *inc. postage*

WALTER KING, LTD.
11, Bolt Court, Fleet Street,
E.C.4.

STRINGER
BROTHERS
ALBION WEST BROMWICH

S.B
IRON & STEEL
PLATES &
SHEETS
BARS & SECTIONS
Telephone:
WEST BROMWICH 043 6-

size isn't everything-



Photograph by kind permission of the Scottish Gas Board, Glasgow District

but this-

HOLMES-CONNERSVILLE
Positive GAS METER

is the largest in Great Britain. The important thing is that it is so relatively small (floor space 8ft. × 14ft.) handling 31 million cu. ft. of gas per day.

HOLMES
FOUNDED 1850
HUDDERSFIELD

W. C. HOLMES & CO. LTD. · HUDDERSFIELD · LONDON · BIRMINGHAM

Telephones: Huddersfield 5280; London Victoria 9971; Birmingham Midland 6830

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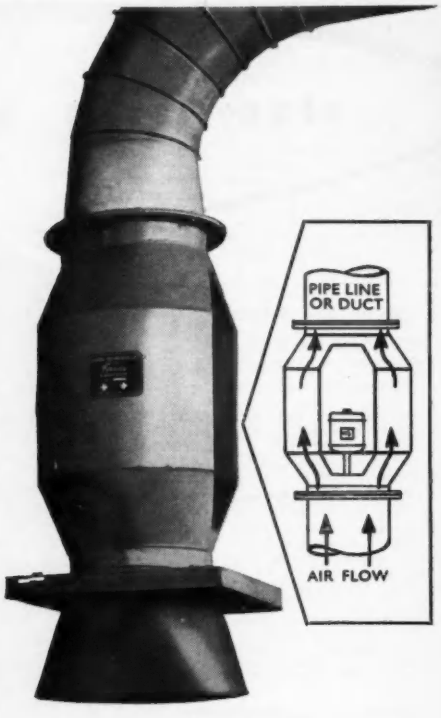
the reasons why Bifurcated Fans are used for extracting Fumes and Gases

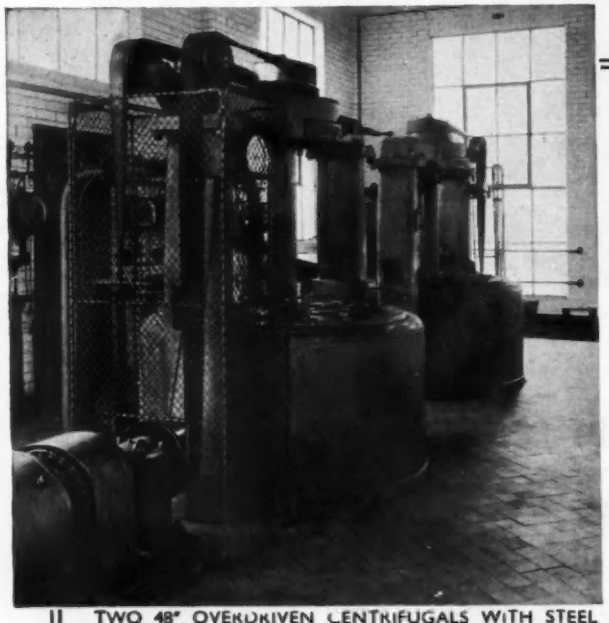
from FUME CUPBOARDS · DE-GREASING, DE-SCALING and DE-OXYDISATION BATHS · PICKLING and NEUTRALISING TANKS IMPREGNATING TANKS · PAINT SPRAY BOOTHS FURNACES and FORGE PRESSES · CONFECTIONERY and BAKING OVENS

BECAUSE within the operational range of these units no other fan compares for price, design simplicity and economy of space. Bifurcated fans are direct driven units which will handle obnoxious fumes and gases up to 350° F. Their easily accessible K.B. made, totally enclosed and weatherproof motors are completely isolated from the fumes or gases handled.
Ranging up to 25″ diameter, the sizes are matched to commonly used pipes and ducts. 10″, 12″, 14″, 16″ and 19″ fans are held in stock. If you want full details of this exclusive fan type write now for Publication No. 28/7



Keith Blackman Ltd
MILL MEAD ROAD, LONDON, N.17
Fan Makers to the Chemical Industry

T.A.7164/605



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C.O.L INTERMITTENT VERTICAL CHAMBERS

The illustration shows an installation of 72 C.O.L. Intermittent Vertical Chambers, with coal and coke handling plant, at the Howdon Works of the Northern Gas Board.

(Photograph by courtesy of the Northern Gas Board)

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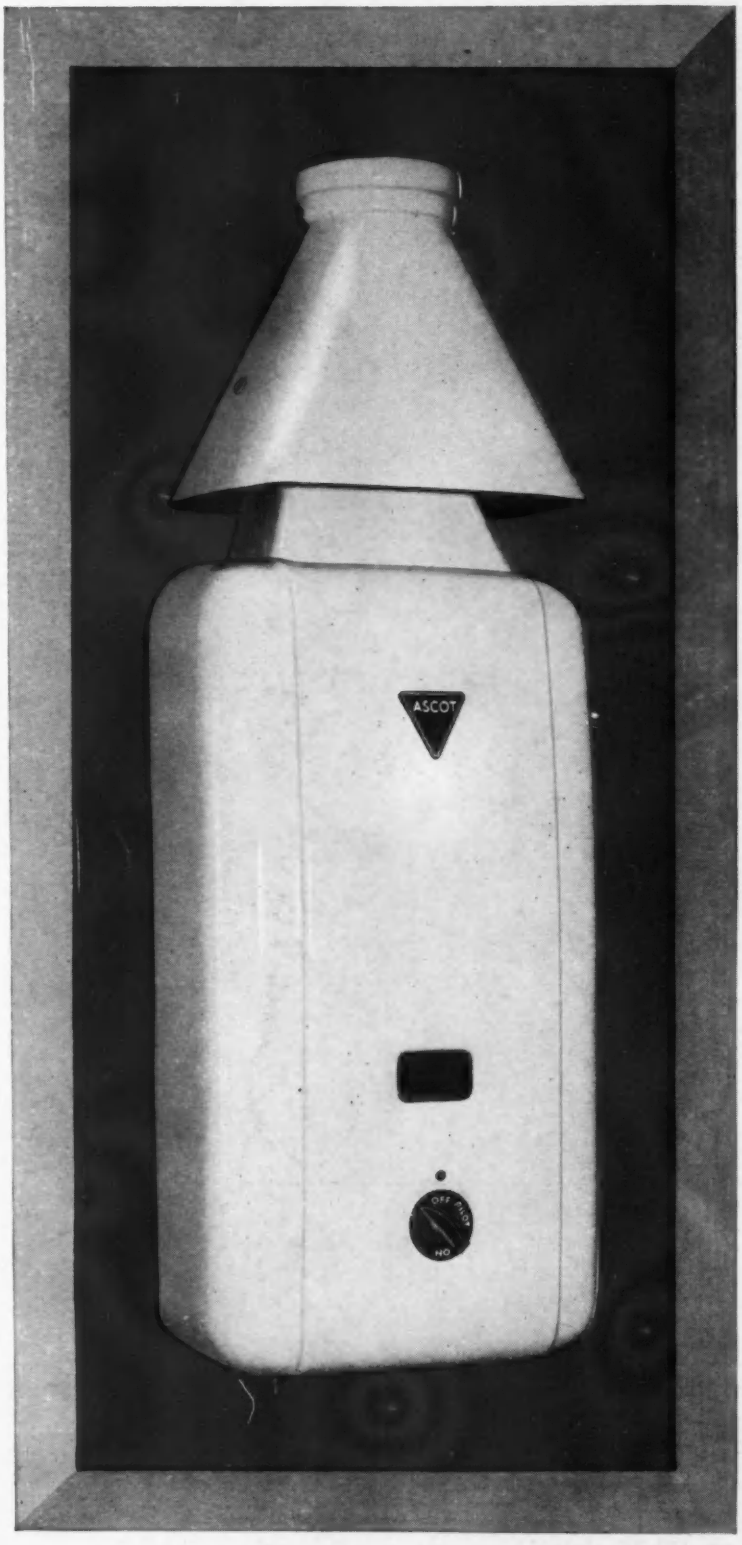

New!

An elegant one-piece case with a panelled front now gives greater dignity to the famous Ascot 709 and 709B multipoint water heaters. The new case is also easier to keep shining bright, for it is of deep-drawn steel without any joins, and is vitreous enamelled all over to present an unbroken surface that time cannot tarnish. The change is only to appearance; mechanism, operation and high efficiency are unaltered. An advantage that fitters will appreciate is that removal of the one-piece case gives free access to all parts of the heating body.

*

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